ALL ABOUT HISTORY™

Viking warrior women

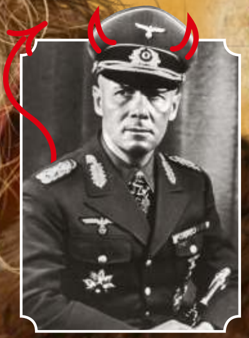
From real-life valkyries to respected witches, discover the role of women in Norse life

DA VINCI WAS HE REALLY A GENIUS?

Flawed inventions and abandoned art: find out why the original Renaissance Man might be overrated

RUSSIAN REVOLUTION

17 things you don't know about the Bolshevik uprising



THE DEVIL'S GENERAL

How much did Erwin Rommel really know about the Nazis?

Macbeth's bloody rise

Meet the Scottish 'Red King' who inspired Shakespeare's tragedy

HISTORY'S GREATEST HAIRSTYLES

Beauty tips from Ancient Egypt, Marie Antoinette and more

ALEXANDER THE GREAT VS WAR ELEPHANTS

Step-by-step guide to the Battle of Hydaspes River

THE WILD WEST BONE WARS

The fossil hunters' feud that fuelled dinosaur discoveries

PLUS Elizabeth I's James Bond **Spanish Civil War** Napoleon in Egypt **Attila the Hun** Quack medicines **Royal wedding cake recipe** Book reviews

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VISIT…

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LADY KATHERINE KNOLLYS
The Unacknowledged Daughter of King Henry VIII
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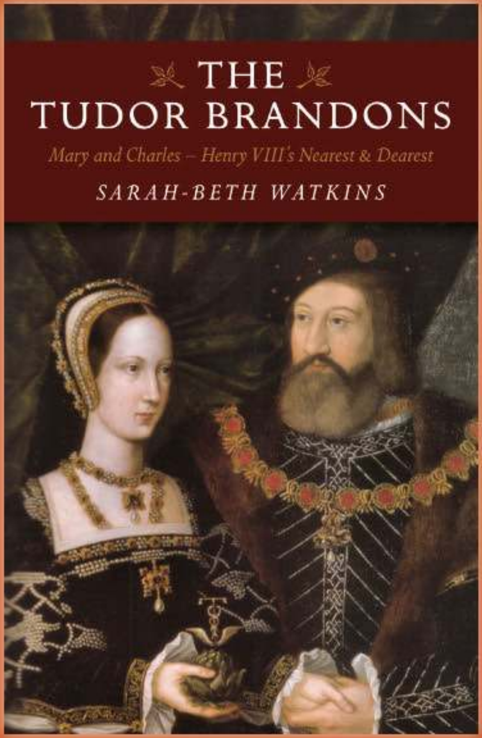
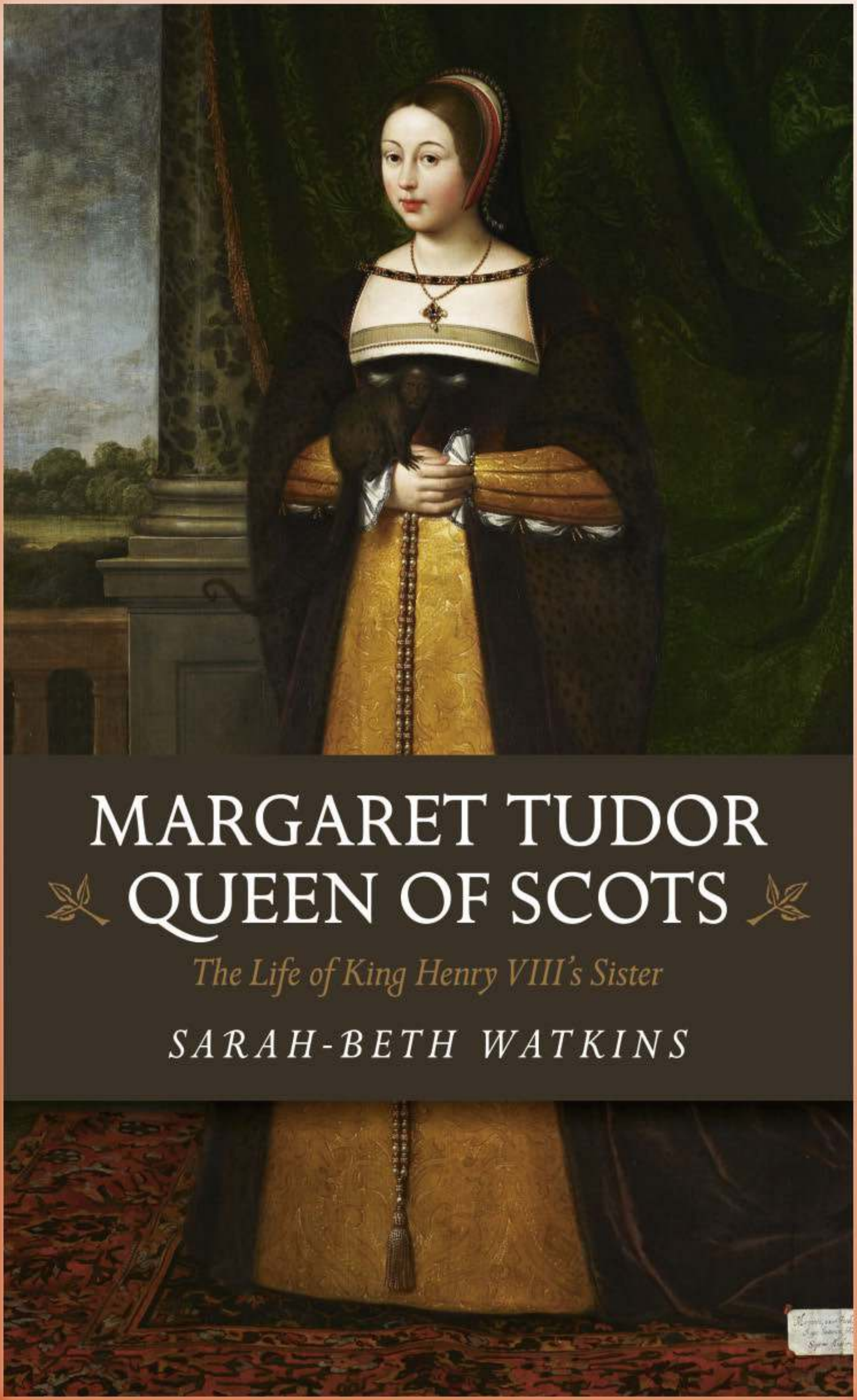

THE TUDOR BRANDONS
Mary and Charles – Henry VIII's Nearest & Dearest
SARAH-BETH WATKINS


MARGARET TUDOR QUEEN OF SCOTS
The Life of King Henry VIII's Sister
SARAH-BETH WATKINS

TUDOR AND STUART HISTORY FROM CHRONOS BOOKS

FROM BEST-SELLING AUTHOR SARAH-BETH WATKINS

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Published by Chronos Books, the factual history imprint of John Hunt Publishing

www.chronosbooks.com

With the 100th anniversary this year, discover fascinating facts about the Russian Revolution on page 42

Welcome

For more than a century the skeletal remains found in Birka, Sweden, were held up as an archetype of the Viking warrior. The body was found in 1889 buried with a sword, axe, spear, armour-piercing arrows, shields and even two horses. Interred with an arsenal of weapons, what else could the 'Birka warrior' be? The answer is a woman, according to modern-day DNA testing.

Is this conclusive proof that 10th-century Norse women actually fought alongside men in raiding parties? Or does it mean the long-held archaeological assumption about Viking burial practices (buried with a sword = warrior) is wrong? This is a debate that has been raging in the historical community ever since the DNA results were revealed in September.

In this month's issue, we weigh the evidence on the Birka warrior, but also ask you to rethink other assumptions you've made about history. Why is Leonardo da Vinci regarded as a genius? Was Macbeth really blood-thirsty and treacherous? Should the Nazi general Erwin Rommel – who may or may not have plotted against Hitler – be regarded as a hero or villain?

We're keen to kickstart a conversation about these topics, so please let us know your thoughts about them via Twitter or Facebook.

Jack Parsons
Editor

Editor's picks

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Decoding da Vinci's genius
Famed as an artist and an inventor, Leonardo has long been regarded as the original Renaissance man. But what did he really do to deserve the title?

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Battle of Hydaspes
Alexander the Great takes on an army of elephants, while trying to cross a river, in the middle of a raging storm, in the dark. What could possibly go wrong?

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Elizabeth I's secret agents
Discover the extreme lengths Sir Francis Walsingham and his band of spies went to protect the Virgin Queen from foreign powers and homegrown plotters.

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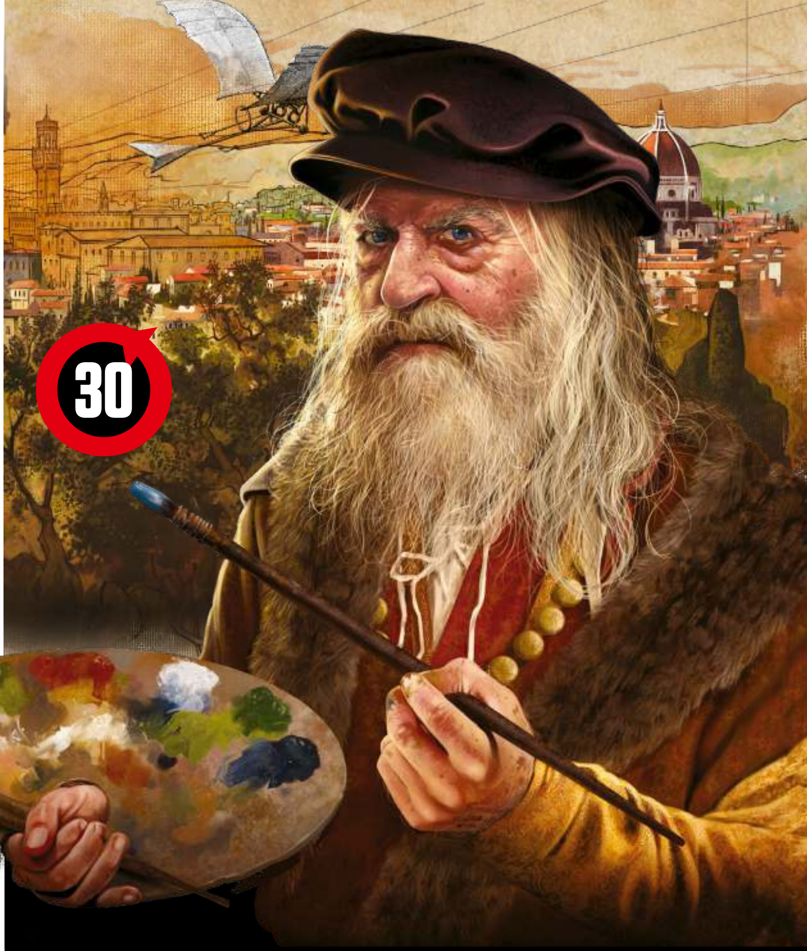

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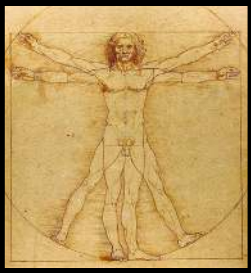

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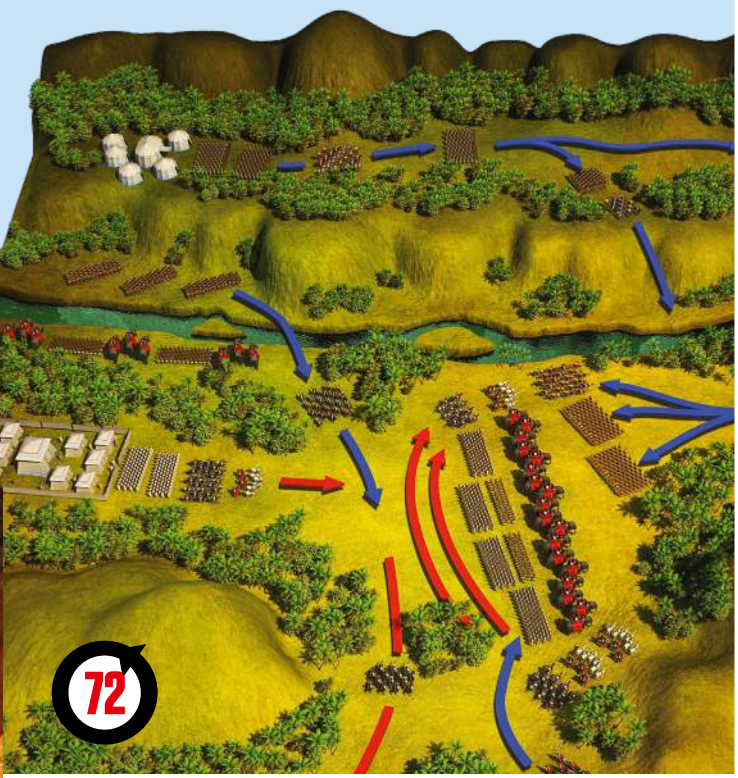

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Europe's borders might have been redrawn if Attila the Hun had survived his wedding night

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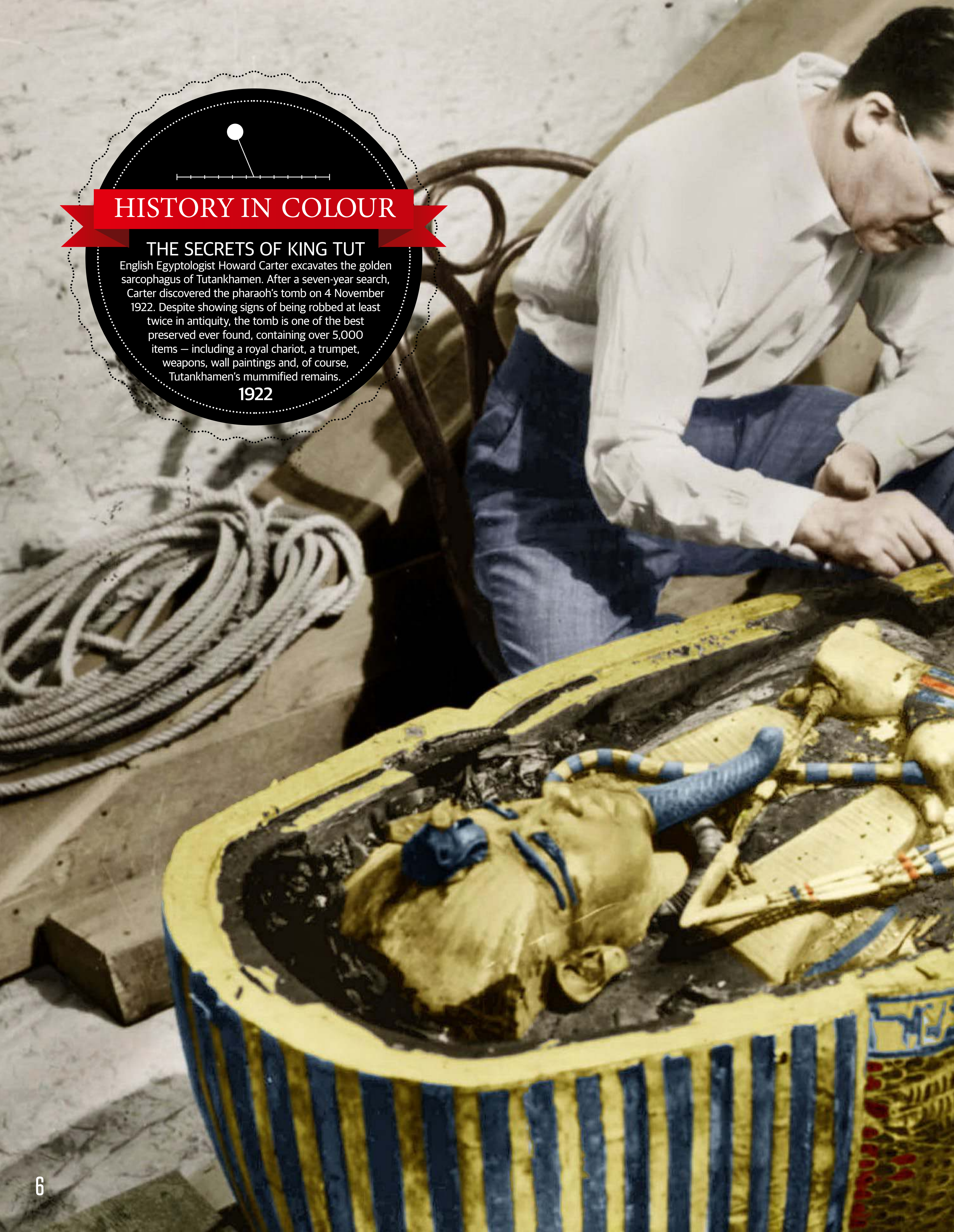


HISTORY IN COLOUR

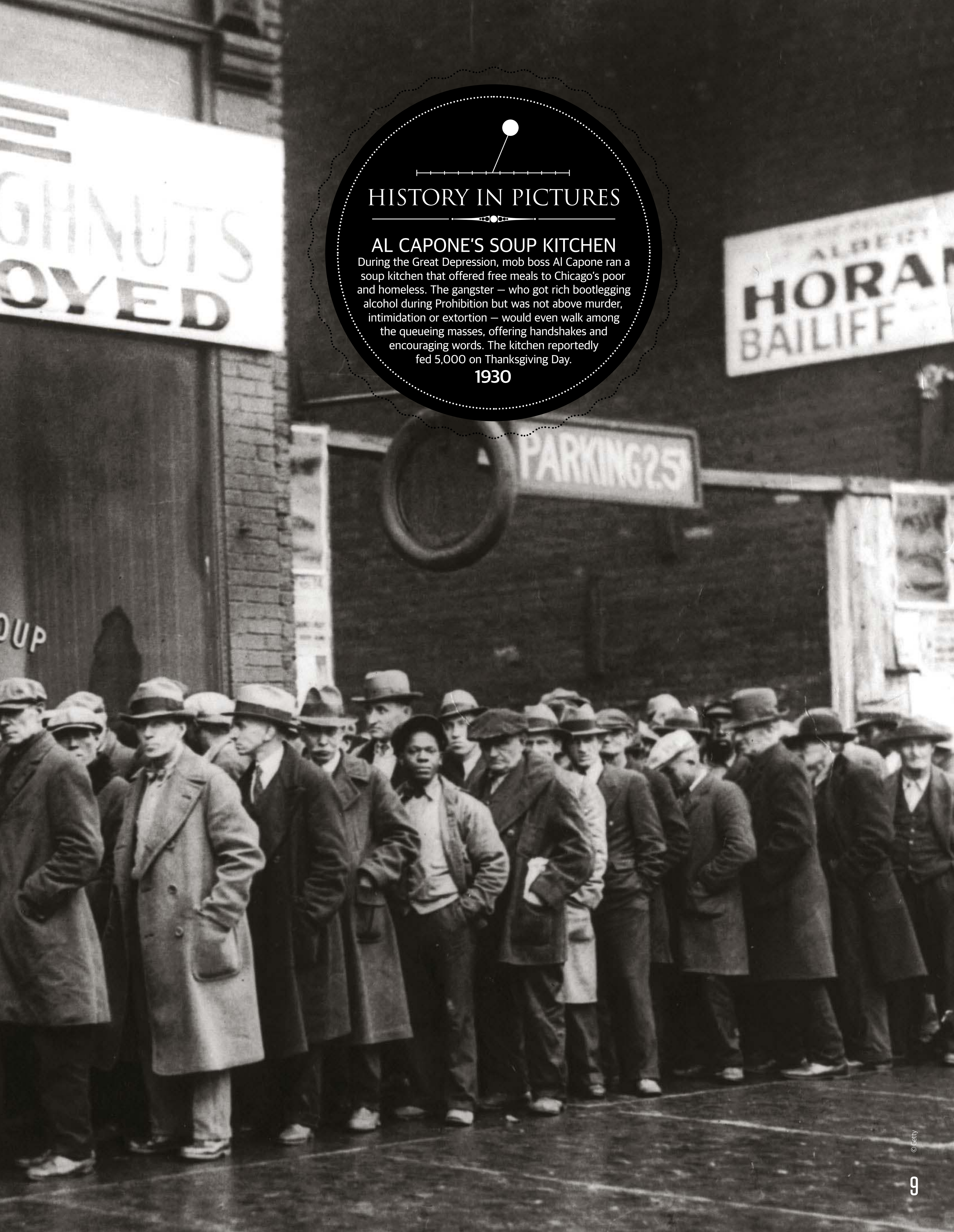
THE SECRETS OF KING TUT

English Egyptologist Howard Carter excavates the golden sarcophagus of Tutankhamen. After a seven-year search, Carter discovered the pharaoh's tomb on 4 November 1922. Despite showing signs of being robbed at least twice in antiquity, the tomb is one of the best preserved ever found, containing over 5,000 items – including a royal chariot, a trumpet, weapons, wall paintings and, of course, Tutankhamen's mummified remains.

1922

© Getty

FREE
UP COFFEE & DOUG
OR THE UNEMPL
FREE SO
&



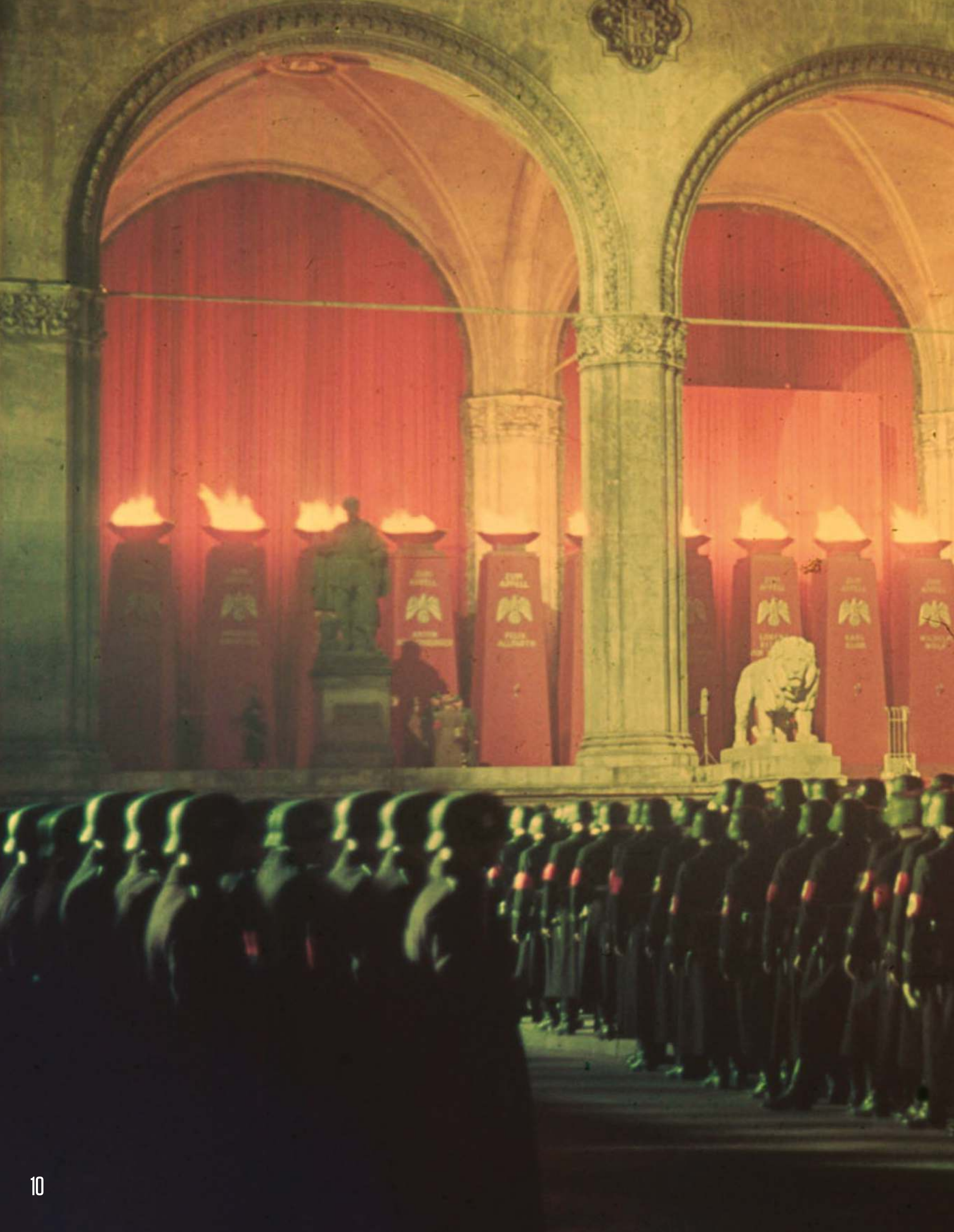
HISTORY IN PICTURES

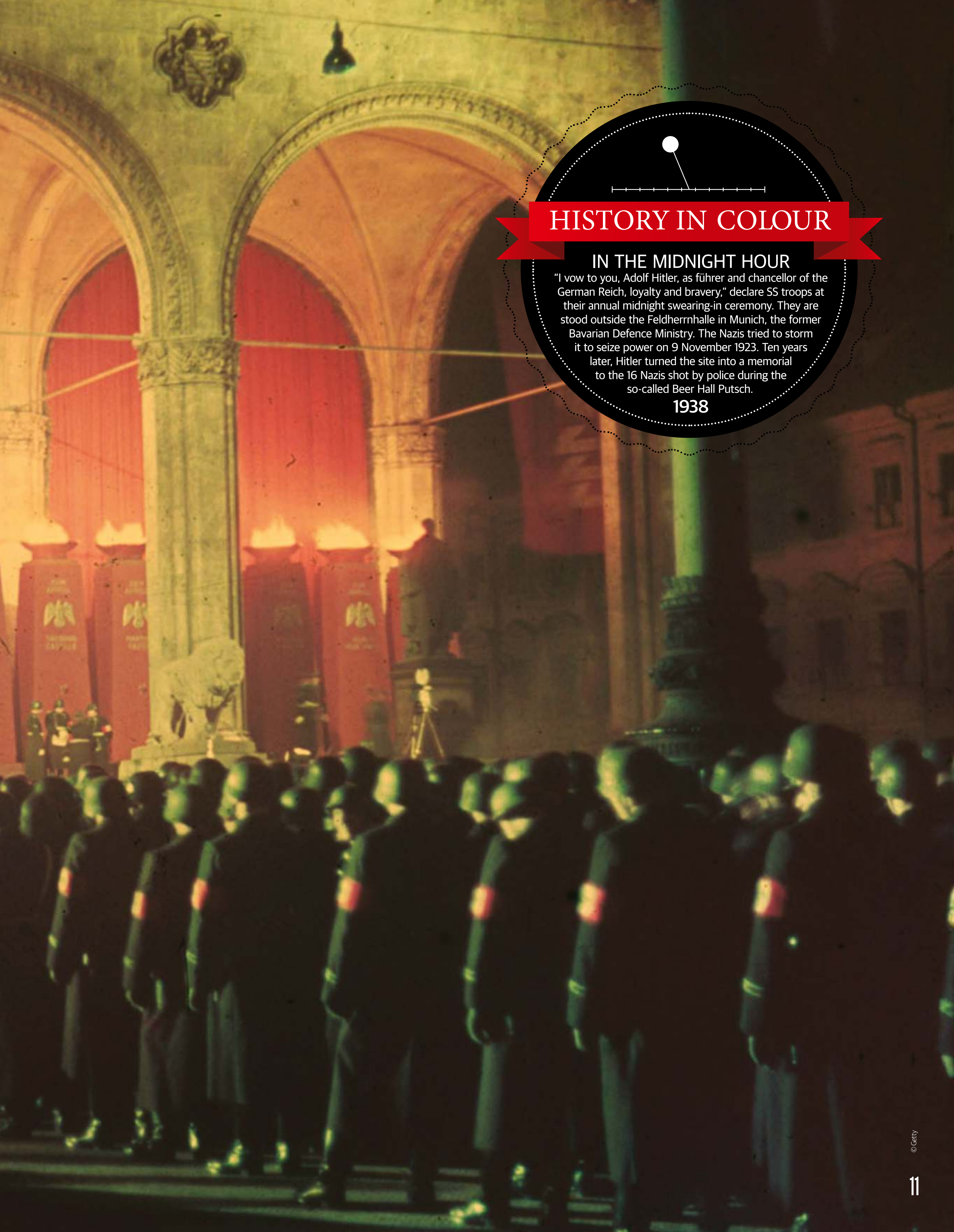
AL CAPONE'S SOUP KITCHEN

During the Great Depression, mob boss Al Capone ran a soup kitchen that offered free meals to Chicago's poor and homeless. The gangster — who got rich bootlegging alcohol during Prohibition but was not above murder, intimidation or extortion — would even walk among the queueing masses, offering handshakes and encouraging words. The kitchen reportedly fed 5,000 on Thanksgiving Day.

1930

© Getty





HISTORY IN COLOUR

IN THE MIDNIGHT HOUR

“I vow to you, Adolf Hitler, as führer and chancellor of the German Reich, loyalty and bravery,” declare SS troops at their annual midnight swearing-in ceremony. They are stood outside the Feldherrnhalle in Munich, the former Bavarian Defence Ministry. The Nazis tried to storm it to seize power on 9 November 1923. Ten years later, Hitler turned the site into a memorial to the 16 Nazis shot by police during the so-called Beer Hall Putsch.

1938

© Getty

HISTORY IN PICTURES

"YOU TALKIN' TO ME?"

American director, producer and screenwriter Martin Scorsese (right) directs the film *Taxi Driver*, which starred his long-time collaborator Robert De Niro (left). Scorsese, who has made over 66 films, including *Mean Streets*, *Goodfellas* and *Raging Bull*, was born 75 years ago on 17 November. His mother, Catherine, appeared in many of his films, either in uncredited roles or small parts.

1976

ON RADIO CALL
OFF 3S96 DUTY

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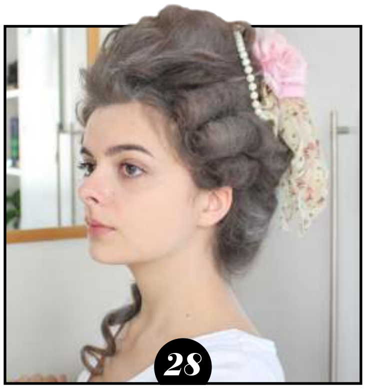
ALL ABOUT
HAIR & BEAUTY

Discover how everything from religion and politics to science and medicine have changed the way we paint our faces and cut our hair

Written by David Crookes, Catherine Curzon, Lucy Kyselica and Jessica Leggett

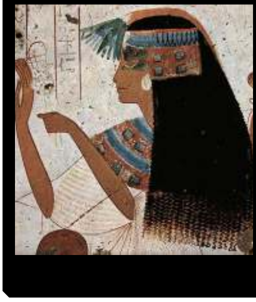


Hairstyles through history

From long braids to powdered wigs and pixie cuts, discover how hairstyle trends have changed throughout time

WIGGING OUT

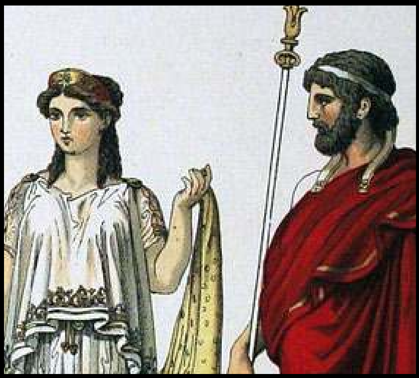
Both Ancient Egyptian men and women shaved their heads entirely and wore elaborate and heavy wigs instead. Archaeologists have discovered combs inside the tombs of those from the elite circles of society.



1550 BCE – 332 BCE

CLASSIC CURLS

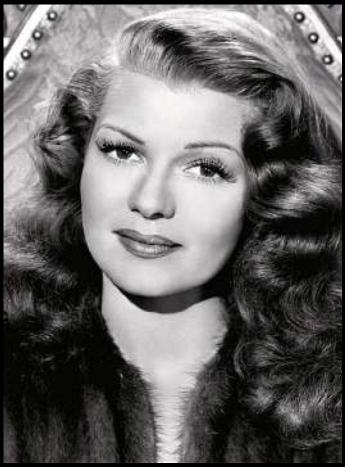
Greek women curled their long hair using bronze rods heated over a fire and wore updos adorned with flowers and gold powder. The length of a woman's hair indicated her social status while men either shaved or kept their hair short with facial beards.



800 BCE – 500 BCE

HOLLYWOOD HAIR

Hollywood actresses such as Rita Hayworth sported long, soft curls, which quickly caught on with the public. Factory workers began to wear bandanas and other accessories to prevent getting their hair caught in the machinery.



1930-1940

EVOLUTION OF THE HAIRDRYER

100 WATTS

The power output of the first handheld hairdryer, released in 1920.

500 WATTS

The power output of hairdryers were five times more powerful in the 1960s.

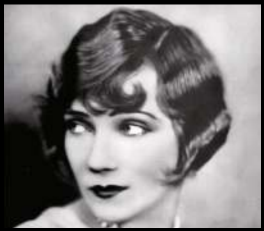
2,000 WATTS

The power output of hairdryers today in 2010s, with some exceeding this amount.

1920

DARE TO BE DIFFERENT

Women rebelled against social expectations by cutting their hair short, with styles like the bob popularised by Hollywood actresses. Brylcreem hit the market and led to men adopting smooth, comb-backed hair.



Don't let your daily dip cause 'DRY HAIR'
BRYLCREEM
BRYLCREEM
BRYLCREEM

1920

A HAIR DYE REVOLUTION

7% of American women dyed their hair in the early 1950s.

40% of American women dyed their hair in the 1970s.

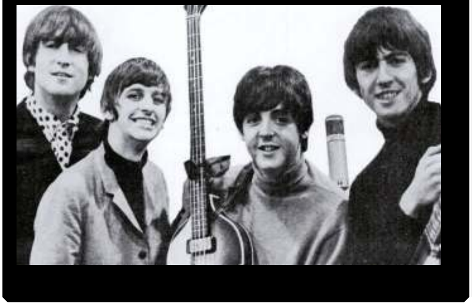
70-75% of American women dyed their hair in 2015.

Clairol released the first at home dye kit in 1956, allowing women to dye their hair at home

1950S

KEEP IT SHORT

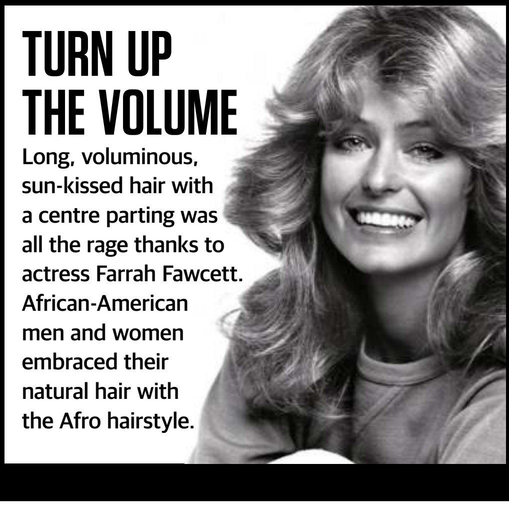
Women rejected time consuming hairstyles for short ones like the pixie cut or the inverted bob. The Beatles' mop-top style made long hair fashionable for men again.



1960S

TURN UP THE VOLUME

Long, voluminous, sun-kissed hair with a centre parting was all the rage thanks to actress Farrah Fawcett. African-American men and women embraced their natural hair with the Afro hairstyle.

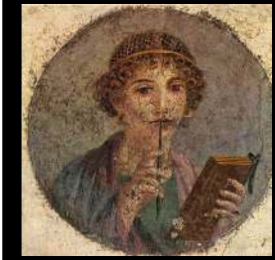


1970S

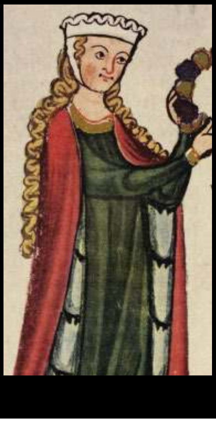
Julius Caesar wore a laurel wreath to hide his baldness and even attempted a comb-over

ALL HAIR LEADS TO ROME

False hairpieces, made from slave hair, created long, thick hair that was elaborately decorated to indicate wealth. Hairnets and veils were also popular accessories for women while men began to abandon their beards.



509 BCE – 476 CE



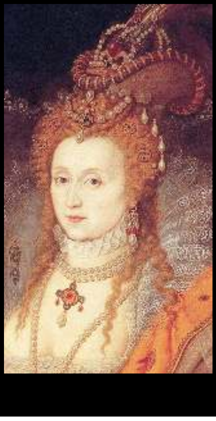
BRAIDED TRESSES

Women wore long, braided hair decorated with ribbons and thread, which they covered with hats and veils if they were married. The pageboy hairstyle became popular among men along with the clean-shaven look.

400-1400 CE

PLUCKING AWAY

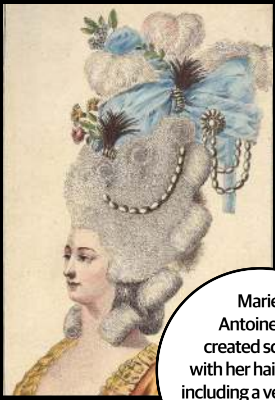
Plucking one's forehead was all the rage when women sought to emulate Queen Elizabeth I's look, complete with ornate headdresses. When the queen began to lose her hair and resorted to wigs, their popularity soared.



1558-1603

REACHING NEW HEIGHTS

The hairstyles of French women, particularly the 'pouf', became so tall and extravagant that padding and wire structures were necessary to keep them supported. Powdered white wigs were popular with men.



Marie Antoinette created scenes with her hairstyles, including a vegetable garden complete with carrots

1700-1800S

SOPHISTICATED STYLE

Victorian women loved upswept, romantic styles with curly hair or tight ringlets, more elegant and demure than the previous century. Facial hair made a comeback for men with moustaches, sideburns and beards.

1840-1900

DEMAND IN THE US

44,851 Number of barbers and hairdressers working in 1880.

84,982 Number of barbers and hairdressers in 1890, almost double last decade.

131,116 Number of barbers and hairdressers working by 1900, almost triple the amount from two decades before.

1880-1900

ECCENTRIC GLAM

Perms took centre stage for women's hair alongside copious amounts of teasing and hairspray. As for men, it was business in the front, party in the back as the mullet hairstyle arrived on the scene.

1980S

LAYERED LOCKS

Reacting against the excess of the 1980s, super-sleek, straight, layered hair and natural, unkempt styles were all the rage with the arrival of the minimalist and grunge movements.

Over 11 million women asked for the 'Rachel' cut, made famous by Jennifer Aniston

1990S

BLAST FROM THE PAST

Hairstyles have become more free and experimental than ever before with lots of different cuts and colours for both men and women. Vintage trends from the past century have resurged once again but most have come with a modern twist.

2000-PRESENT

EGYPTIAN MAKE-UP KIT

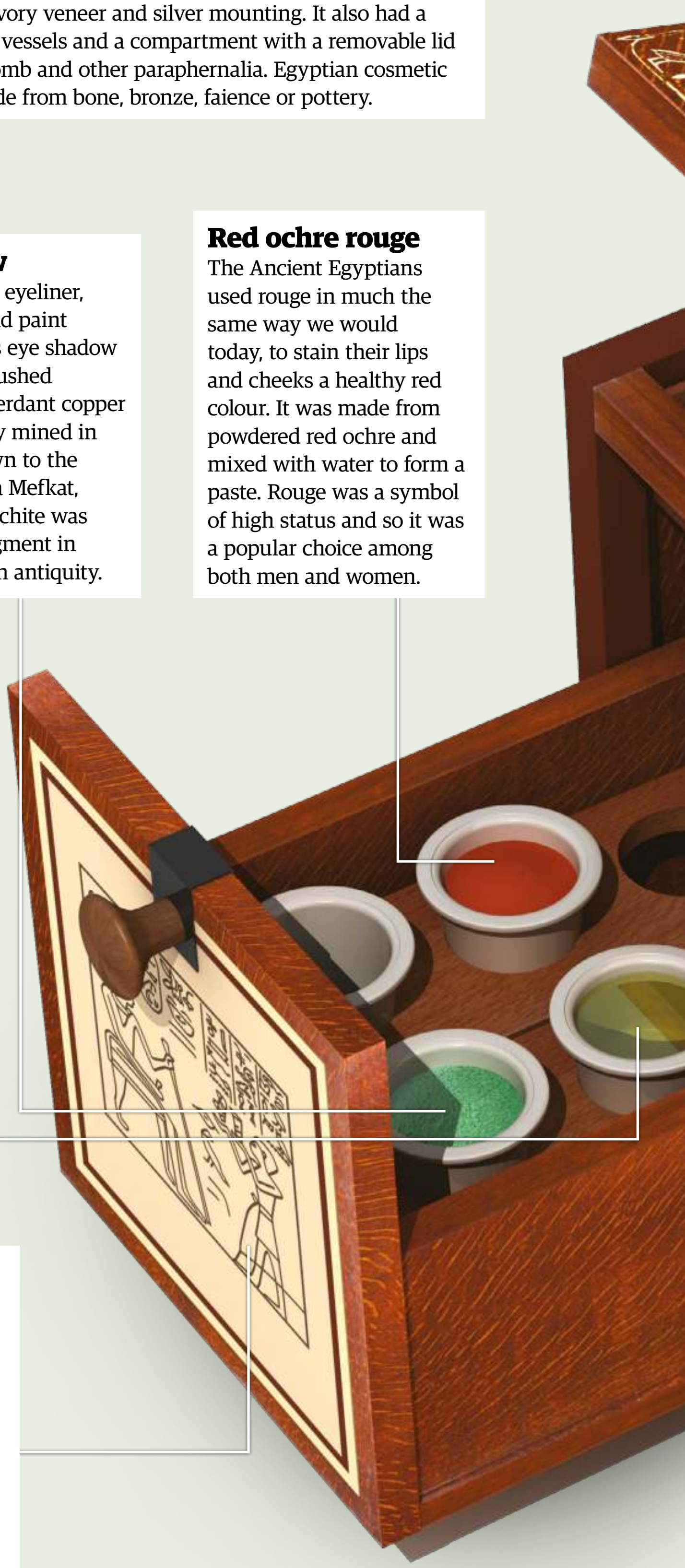
EGYPT, 2686-332 BCE

The Ancient Egyptians went to great lengths to make themselves look good. Both men and women wore eyeliner and coated themselves in creams to ensure their skin looked smooth. There are accounts of kings and queens bathing not just every day but after every meal and covering themselves in fragrant perfumes. To make sure they could keep up their beauty regimen in the afterlife, pharaohs filled their tombs with jars of make-up, jewellery and even wigs.

This culture of using cosmetics pervaded every level of society. Even if they couldn't afford the same products as the upper classes, commoners would do their best to imitate the same make-up trends. For their part, the wealthy would also use skin-lightening creams to emphasise that they did not work outside in the sun all day.

However, we should think twice before dismissing the Ancient Egyptians as simply vain. Recent scientific research has suggested that the smoky-eyed look worn by Egyptians may have had a medical benefit. Kohl eyeliner, when mixed with moisture from the eyes, would have had anti-bacterial properties. Heavy application might also have helped to reduced glare from the sun. Their use of creams and lotions would also have acted as a rudimentary sunscreen. While the Ancient Egyptians would not have understood how this worked, we do know they attributed magical properties to their make-up, believing it would summon protection to fend off illness.

While cosmetics were used throughout the Ancient Egyptian's reign, the best condition make-up box we have is 3,000 years old. The so-called Cosmetic Box of Cupbearer Kemini was found in 1910 by Howard Carter in the tomb of Pharaoh Renseneb. A hand mirror and four stone ointment jars were found nearby and presumed to have belonged to it.



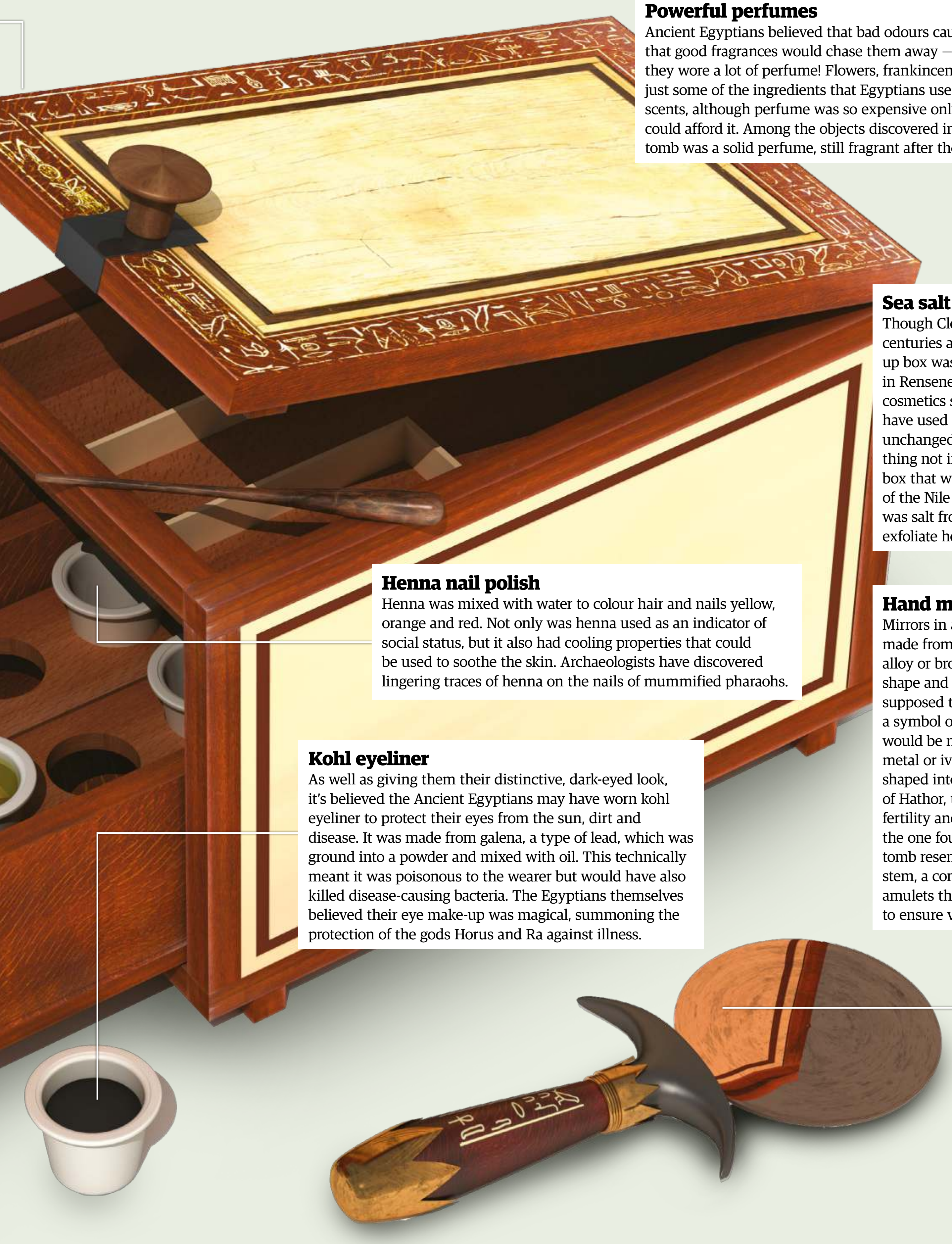
Handcrafted box
Dressing tables didn't appear until the 17th century – before then, many ancient cultures crafted ornate, portable boxes to store make-up. This 28-centimetre-long Cosmetic Box of Cupbearer Kemini was made of cedar, with ebony and ivory veneer and silver mounting. It also had a drawer for storing eight vessels and a compartment with a removable lid for storing a mirror, a comb and other paraphernalia. Egyptian cosmetic boxes could also be made from bone, bronze, faience or pottery.

Green eyeshadow
As well as using kohl as eyeliner, Ancient Egyptians would paint their eyelids green. This eye shadow would be made from crushed malachite, a vibrantly verdant copper ore. This was commonly mined in the Sinai Desert – known to the Ancient Egyptians as Ta Mefkat, 'land of turquoise'. Malachite was also used as mineral pigment in green paints dating from antiquity.

Red ochre rouge
The Ancient Egyptians used rouge in much the same way we would today, to stain their lips and cheeks a healthy red colour. It was made from powdered red ochre and mixed with water to form a paste. Rouge was a symbol of high status and so it was a popular choice among both men and women.

Jar of honey
Honey was a crucial ingredient in the Ancient Egyptian beauty regime. It could be mixed with milk to create luxurious face masks or applied to the skin as a moisturiser. Honey was also useful for its medicinal properties that could sooth the skin if it became sunburnt or infected. Incredibly, pots of honey have been recovered from Egyptian tombs still perfectly preserved and edible.

Personalised finish
The incised scene on the front of the box depicts Cupbearer Kemini, a high-ranking servant who was the only one allowed to wait on the royal table, presenting a vessel of ointment to Pharaoh Amenemhat IV. It's uncertain if the box originally belonged to Kemini or Amenemhat, but it was found in the tomb of Pharaoh Renseneb, a descendent of Amenemhat who ruled for four months in 1777 BCE.



Powerful perfumes

Ancient Egyptians believed that bad odours caused disease and that good fragrances would chase them away – it's no wonder that they wore a lot of perfume! Flowers, frankincense and myrrh were just some of the ingredients that Egyptians used to create beautiful scents, although perfume was so expensive only the upper classes could afford it. Among the objects discovered in Tutankhamun's tomb was a solid perfume, still fragrant after thousands of years.

Sea salt scrub

Though Cleopatra ruled centuries after this make-up box was sealed up in Renseneb's tomb, the cosmetics she would have used were relatively unchanged. However, one thing not included in Kemini's box that we know the Queen of the Nile used regularly was salt from the Dead Sea to exfoliate her skin.

Henna nail polish

Henna was mixed with water to colour hair and nails yellow, orange and red. Not only was henna used as an indicator of social status, but it also had cooling properties that could be used to soothe the skin. Archaeologists have discovered lingering traces of henna on the nails of mummified pharaohs.

Kohl eyeliner

As well as giving them their distinctive, dark-eyed look, it's believed the Ancient Egyptians may have worn kohl eyeliner to protect their eyes from the sun, dirt and disease. It was made from galena, a type of lead, which was ground into a powder and mixed with oil. This technically meant it was poisonous to the wearer but would have also killed disease-causing bacteria. The Egyptians themselves believed their eye make-up was magical, summoning the protection of the gods Horus and Ra against illness.

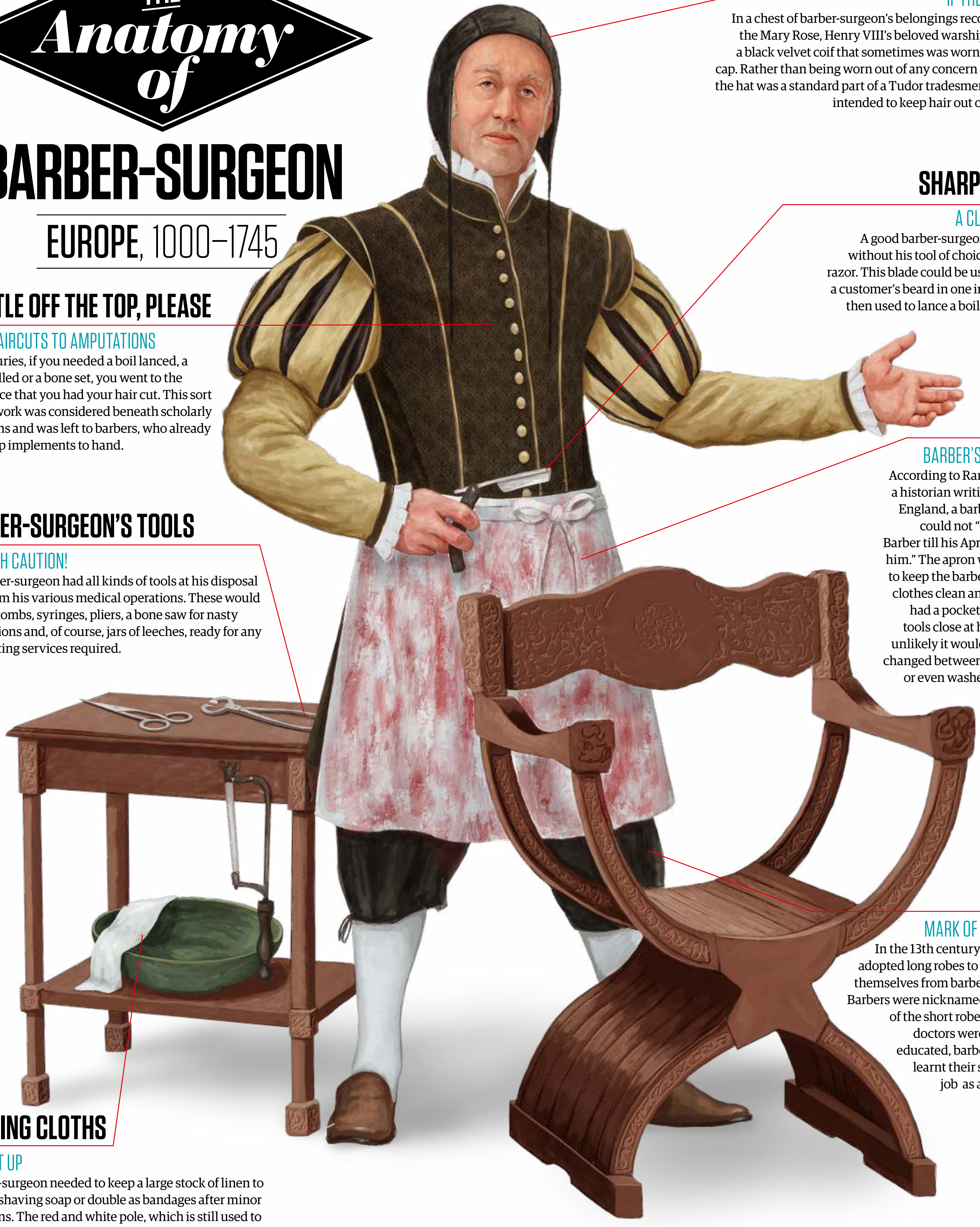
Hand mirror

Mirrors in ancient times were made from polished copper alloy or bronze. Their rounded shape and reflectiveness was supposed to represent the sun, a symbol of life. The handles would be made from wood, metal or ivory and were often shaped into the figure of Hathor, the goddess of fertility and beauty. However, the one found in Renseneb's tomb resembled a papyrus stem, a common shape for amulets that were supposed to ensure vitality.

© Adrian Mann

THE *Anatomy of* BARBER-SURGEON

EUROPE, 1000–1745



TRADESMEN'S CAP

IF THE HAT FITS…

In a chest of barber-surgeon's belongings recovered from the Mary Rose, Henry VIII's beloved warship, there was a black velvet coif that sometimes was worn under a flat cap. Rather than being worn out of any concern for hygiene, the hat was a standard part of a Tudor tradesmen's uniform, intended to keep hair out of their eyes.

A LITTLE OFF THE TOP, PLEASE

FROM HAIRCUTS TO AMPUTATIONS

For centuries, if you needed a boil lanced, a tooth pulled or a bone set, you went to the same place that you had your hair cut. This sort of dirty work was considered beneath scholarly physicians and was left to barbers, who already had sharp implements to hand.

SHARP RAZOR

A CLOSE SHAVE

A good barber-surgeon was never without his tool of choice, a straight razor. This blade could be used to shave a customer's beard in one instance and then used to lance a boil in the next!

APRON

BARBER'S TOOL BELT

According to Randle Holme, a historian writing in Stuart England, a barber-surgeon could not "be termed a Barber till his Apron be about him." The apron would serve to keep the barber-surgeon's clothes clean and may have had a pocket for keeping tools close at hand, but its unlikely it would have been changed between operations or even washed regularly.

BARBER-SURGEON'S TOOLS

USE WITH CAUTION!

The barber-surgeon had all kinds of tools at his disposal to perform his various medical operations. These would include combs, syringes, pliers, a bone saw for nasty amputations and, of course, jars of leeches, ready for any bloodletting services required.

SHORT ROBE

MARK OF THE TRADE

In the 13th century, physicians adopted long robes to distinguish themselves from barber-surgeons. Barbers were nicknamed "surgeons of the short robe." While the doctors were university educated, barber-surgeons learnt their skills on the job as apprentices.

SHAVING CLOTHS

CLEAN IT UP

A barber-surgeon needed to keep a large stock of linen to wipe up shaving soap or double as bandages after minor operations. The red and white pole, which is still used to identify a barber's shop, may have meant to indicate the blood and napkins used to clean up during bloodletting.

© Kevin McGivern

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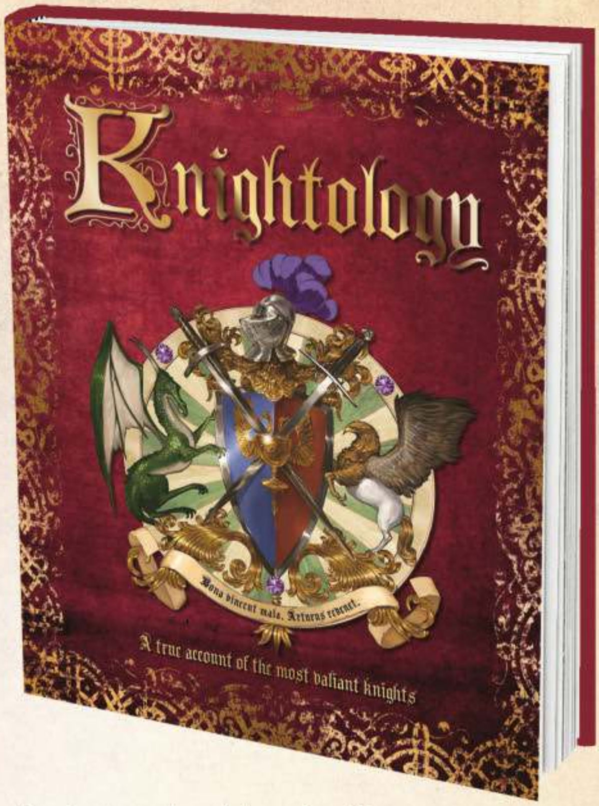
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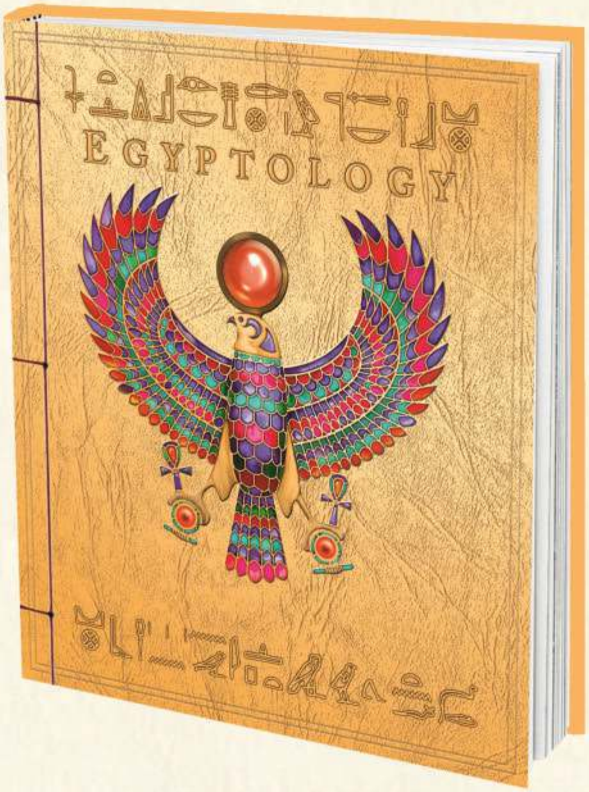
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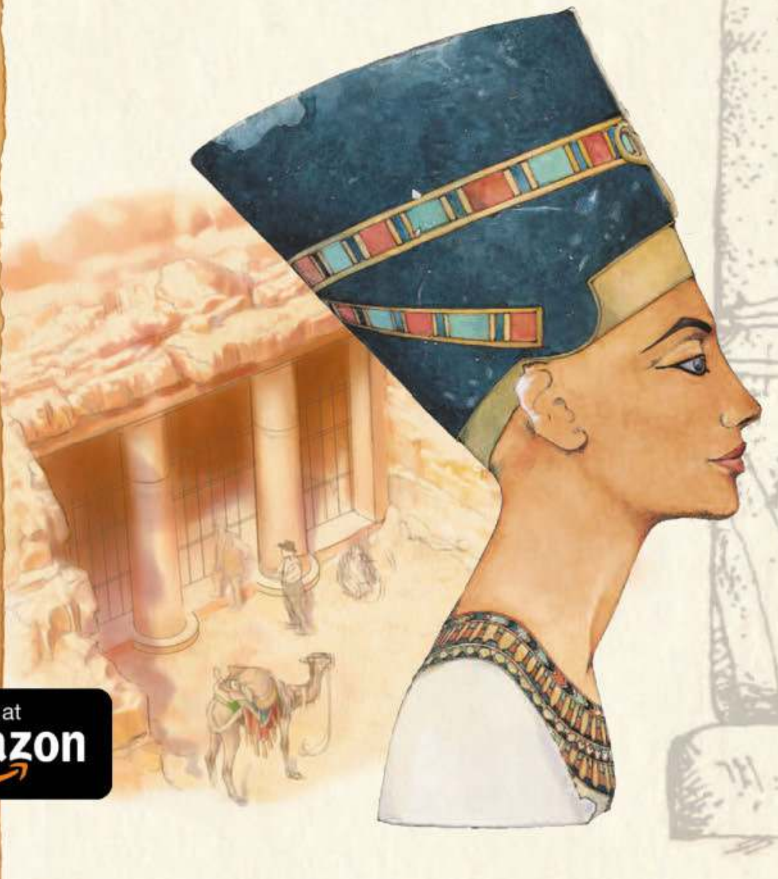

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Day in the life

MARIE ANTOINETTE'S HAIRDRESSER

CARING FOR THE LAST QUEEN OF FRANCE'S HAIR WAS A FULL-TIME JOB PARIS, 1746–1820

Marie Antoinette is arguably the most iconic queen that France ever knew. Saint to some, the epitome of sin to others, she was famed for her love of decadence, beauty and largesse. She lived a life of luxury and became a figurehead of the Bourbon monarchy thanks to her exquisite taste in fashion and her trend-setting and painstakingly created hairstyles. The man responsible for keeping the queen's do looking just so was Léonard-Alexis Autié. As a society stylist with a list of illustrious clients, no man knew the queen of France's coiffure more intimately.

THE JOURNEY TO VERSAILLES

Thanks to his association with Marie Antoinette, Léonard-Alexis Autié, known as Léonard, was the most popular and in-demand stylist in Paris. This meant that he could only find room in his busy schedule to visit the queen every Sunday at 11am. The rest of the week he entrusted the care of her hair to his brother, Jean-François.

MEETING MARIE ANTOINETTE

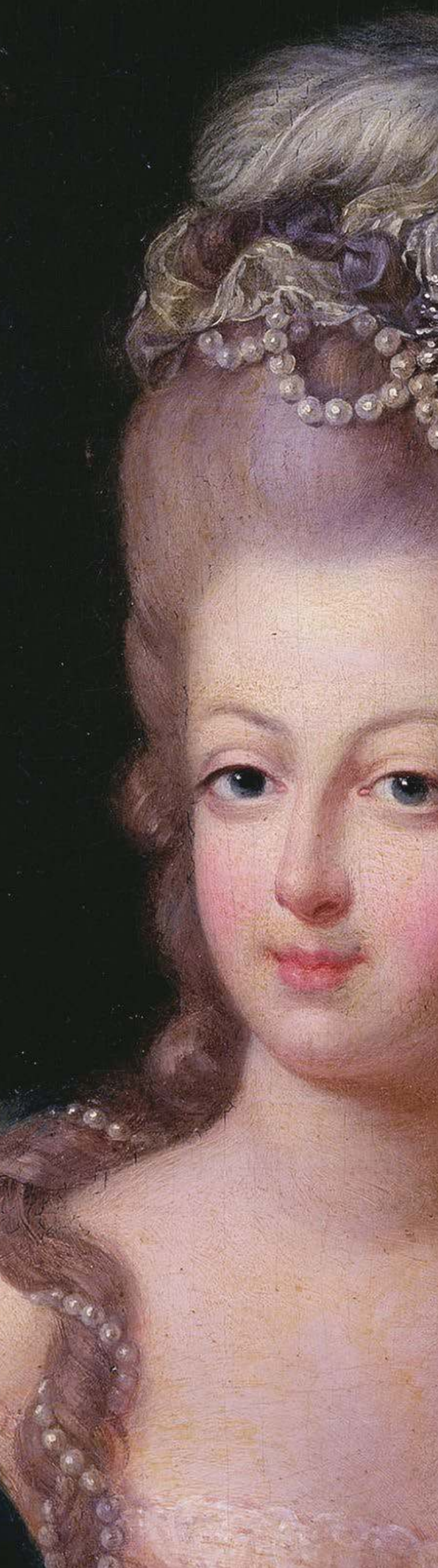
Marie Antoinette's day adhered to a rigid schedule. By the time she welcomed Léonard to her chambers at 11am, she had been up for two hours bathing, breakfasting and dressing according to strictly enforced protocols. Then the queen prayed and visited her aunts-in-law before returning to her rooms to meet Léonard, whom she regarded as a trusted confidante.

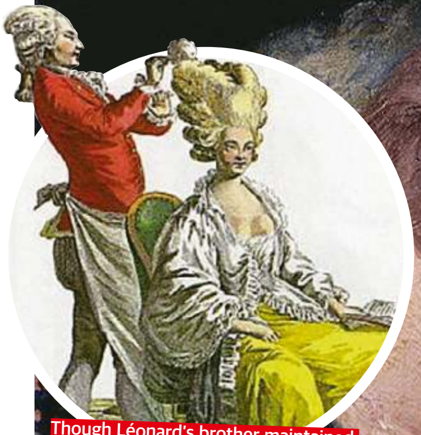
THE AUDIENCE ARRIVES

As Léonard was styling the queen's hair, the brothers of Louis XVI arrived to observe the process, in accordance with the traditional routines of the French monarchy. As the most important members of the court after the king and queen, the Princes of the Royal Blood were afforded access to this intimate ceremony between Marie Antoinette and Léonard.

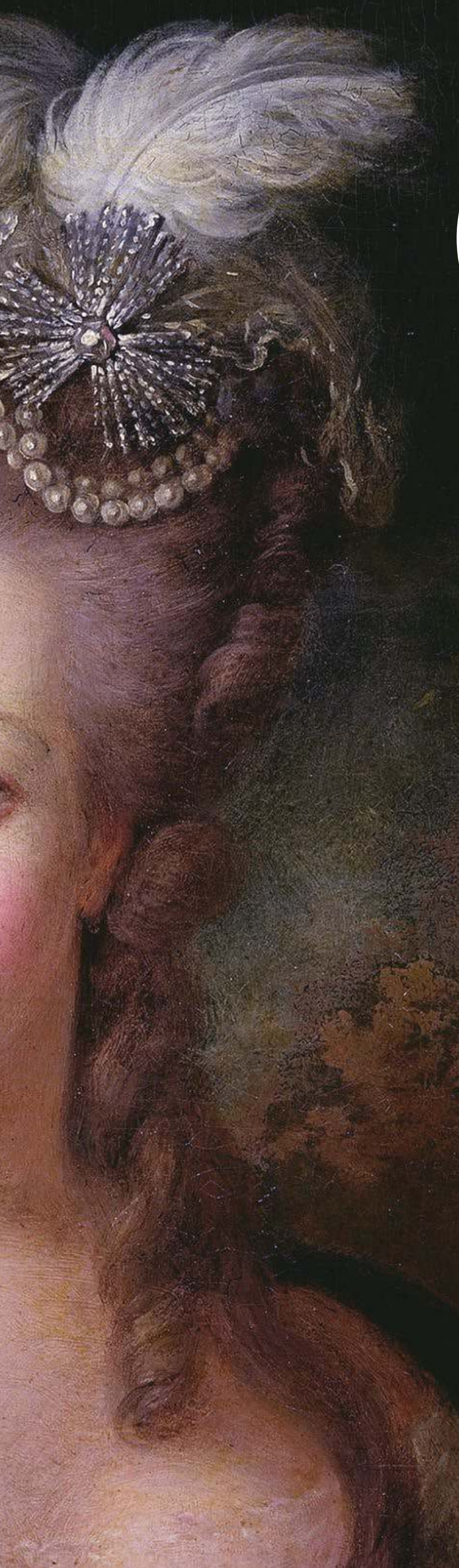
STYLING THE POUF

The pouf was, without a doubt, Marie Antoinette's most elaborate and tallest hairstyle and it made

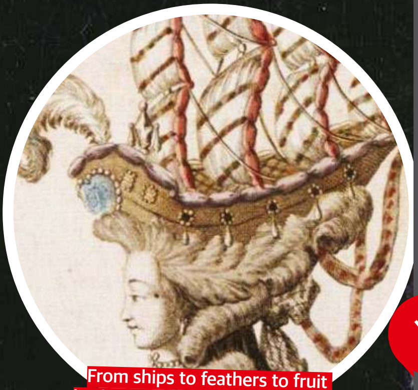




Though Léonard's brother maintained Marie Antoinette's style throughout the week, Léonard himself would redress it every Sunday



Layered with pearls, feathers and decorations, the queen's hair was always the talking point of fashionable society



From ships to feathers to fruit baskets, Léonard made elaborate works of art atop the queen's head

Léonard's name. The hair was built up around a metal frame and horsehair until it reached the magnificently outrageous heights often associated with the late queen. The style was painstakingly woven around the frame, entwining it was with 'postiches', or false hairpieces.

POWDERING THE POUF

Once the towering pouf was completed, Léonard used a little pomade, such as beechwood wax, to coat the hair. With the queen holding a protective mask in front of her face, he then took a cup of wheat flour hair powder and, using a puff of goose feathers, applied a coating of powder to Marie Antoinette's waxed hair.

DRESS TO IMPRESS

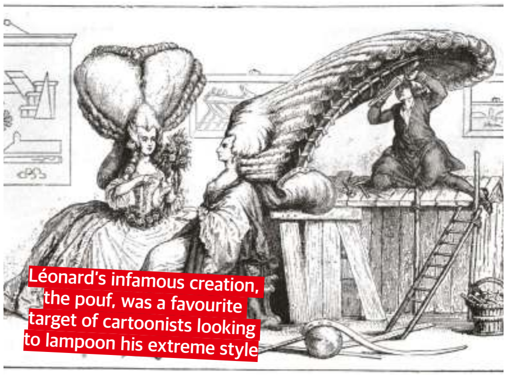
For Marie Antoinette and Léonard, high hair and lashings of powder weren't the end of the matter when it came to hairstyles. Together they pioneered statement hair and Léonard finished off his creations with decorations ranging from feathers to flowers to the infamous model ships that cropped up in so many caricatures of the late queen.

THE COURT ARRIVES

At noon, Léonard departed Marie Antoinette's chambers as she began her Grand Toilette, an elaborate beauty routine performed in front of female courtiers. Léonard, meanwhile, made the most of his celebrity status as Coiffeur de la Reine by spending the afternoon at Versailles, dining, socialising and soaking up the plaudits of the court and queen.

THE EVENING ENTERTAINMENTS

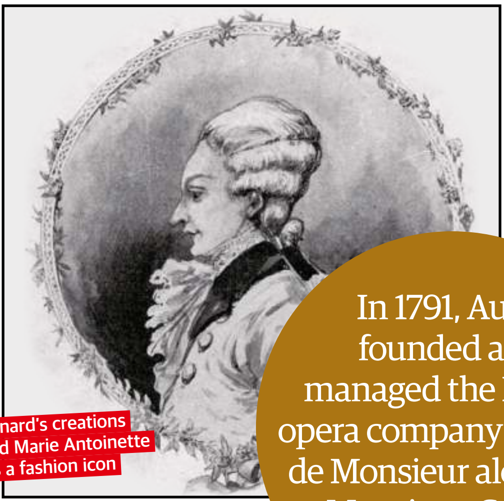
Should Marie Antoinette have an evening engagement, such as a formal ball or visit, Léonard would ensure that her hair would be the most dramatic and eye-catching of all the attendees. If no additional styling work was required, he would leave Versailles for his home, ready to begin another fabulous week as the toast of Paris.



Léonard's infamous creation, the pouf, was a favourite target of cartoonists looking to lampoon his extreme style

Hall of Fame
INSPIRATIONAL STYLISTS

Meet the hairdressers and trendsetters who defined entire eras with their iconic cuts



Léonard's creations defined Marie Antoinette as a fashion icon

LEÓNARD AUTIÉ

FRENCH C.1751-1820

Lavishly decorated hairstyles were the hallmark of Léonard Autié. His "magical comb" caught the eyes of many Parisian noblewomen, but he is best remembered as Queen Marie Antoinette's hairdresser. He created a number of unique and extravagant hairstyles for her, including the famous pouf, which became synonymous with her time as queen. Autié opened his own salon and hairdressing school, the Académie de coiffeur, in 1787, at a time when hairdressing was emerging as a real profession. While Marie Antoinette and many of the other women he styled lost their heads during the French Revolution, Autié escaped to Russia.

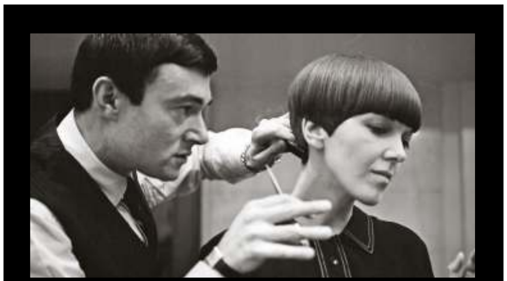
> In 1791, Autié founded and managed the Italian opera company Théâtre de Monsieur alongside Monsieur, Comte de Provence

JEAN HARLOW

AMERICAN 1911-37

The original blonde bombshell, actress Jean Harlow's striking platinum blonde hair captivated audiences across America. It caused numerous women to reach for the dye in an attempt to recreate Harlow's iconic colour, although she always maintained that her hair was natural. Her stylist, Alfred Pagano, later admitted that he used a combination of Clorox bleach, ammonia, peroxide and Lux soap flakes on a weekly basis to achieve her icy colour. It has been suggested that this toxic combination, which produces noxious gas, may have contributed to her early death from kidney failure, aged just 26.

Jean Harlow was Marilyn Monroe's childhood idol



Vidal Sassoon perfecting one of his legendary avant-garde cuts on Mary Quant

VIDAL SASSOON

BRITISH 1928-2012

One of the most iconic hairstylists entered his career after a premonition from his mother that hairdressing was the right path for him. Vidal Sassoon's sharp, geometric looks like the five-point cut catapulted him to fame during the 1960s. His hairstyles were easy to maintain and liberated women from the time-consuming hairdos that dominated the 1950s. Success led him to launch salons across London and the US, a product line and a series of training academies that still run to this day. His clients included Mia Farrow, Elizabeth Taylor and Mary Quant, making him one of the world's first celebrity hairdressers.

> "If you don't look good, we don't look good"
> ***Vidal Sassoon***

Kenneth's clientele included Judy Garland, Jackie Kennedy and Marilyn Monroe

KENNETH BATTELLE

AMERICAN 1927-2013

Sassoon's American counterpart, Kenneth Battelle, became famous for popularising soft, romantic looks devoid of thick hairspray and heavy bleaching. He created Jackie Kennedy's signature bouffant to frame and enhance her features. Battelle even cut her hair the day before her husband, President John F Kennedy, was assassinated. Interestingly, Battelle came to the rescue of Marilyn Monroe when her hair began to fall out in 1958 after years of perms and bleaching. He styled her hair ahead of her infamous 'Happy Birthday' performance and for her last *Vogue* shoot, just a few weeks before her death.

> Kenneth was the first and only hairdresser to ever win the Coty American Fashion Critics' Award, which he won in 1961

LEONARD LEWIS

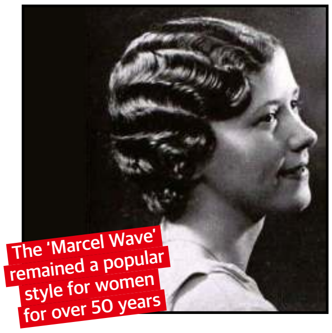
BRITISH 1938-2016

It was thanks to Lewis that supermodel Twiggy got the cropped haircut that made her the face of the Swinging Sixties. Known professionally as 'Leonard of Mayfair', he had many famous clients like Jack Nicholson, Meryl Streep, The Beatles and even the Kray twins. In his London salon, the House of Leonard, he trained many of Britain's current leading hairdressers, including John Frieda, Daniel Galvin and Nicky Clarke. Lewis is also noted for his work on a number of Stanley Kubrick films, which started in 1968. He was also a close friend of Vidal Sassoon, under whom he initially trained for a year.

Leonard's Mayfair salon was the place to be in the 1960s

Walker's products were an innovation in black hair care

Madam CJ Walker was not only America's first self-made female millionaire, but the first black millionairess in the world



The 'Marcel Wave' remained a popular style for women for over 50 years

FRANÇOIS MARCEL GRATEAU

FRENCH 1852-1936

Grateau changed the world of hairstyling forever when he invented the reverse curling iron in 1872. The 'Marcel Wave', achieved with Marcel's curling iron, rose to its peak popularity during the 1920s and 30s as it proved easier to achieve and lasted longer than finger waves. A skilled hairdresser was needed to use the iron, which was typically heated over a gas burner, because it was too difficult for women to accomplish the desired waves on herself.

MADAM CJ WALKER

AMERICAN 1867-1919

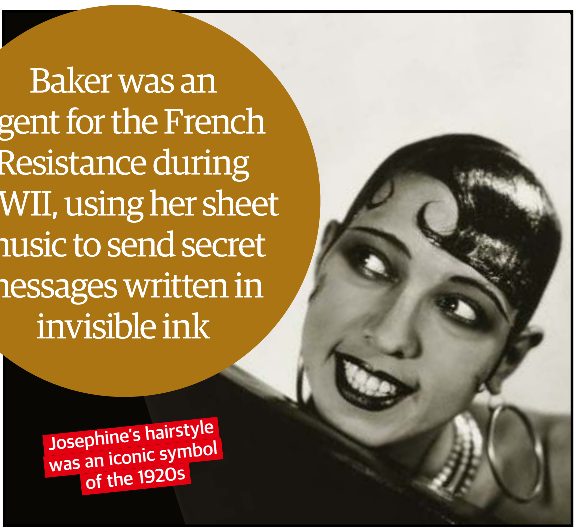
Walker's hair care line, aimed at African-American women, revolutionised the way black women cared for their hair. Widowed at the age of 20, Walker began to lose her hair and she sought a way to encourage hair growth. The result was the 'Walker system', which focused on scalp preparation and lotions coupled with hot iron combs to create smooth, shiny hair. Her system proved extremely popular and she became one of the most successful African-American business owners of all time.

JOSEPHINE BAKER

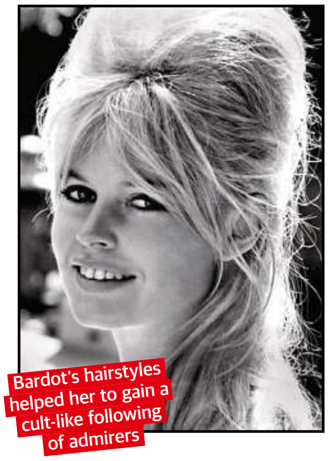
AMERICAN 1906-75

Baker's slicked down, Eton crop hairstyle helped her achieve stardom as an entertainer in 1920s Paris. She applied thick pomade to flatten her short hair to her head and created kiss curls on her forehead and in front of her ears. In the 1930s, she brought out a hair gel, Bakerfix, so that women could emulate her signature look. Baker's hair was so iconic that it has gone down in history as a symbol of the Jazz Age.

Baker was an agent for the French Resistance during WWII, using her sheet music to send secret messages written in invisible ink



Josephine's hairstyle was an iconic symbol of the 1920s



Bardot's hairstyles helped her to gain a cult-like following of admirers

BRIGITTE BARDOT

FRENCH 1934-PRESENT

Bardot's glamorous, dishevelled half-up, half-down beehive was just one of her classic looks that defined the 1960s. From pigtails and braids to headbands and teased hair, her influence on hair trends was profound. To this day, the cultural impact that she has made can still be seen as women continue to emulate her hairstyles. Numerous articles can be found with how-to guides on how to achieve her iconic hairstyles.

Max Factor has been honoured with a star on the Hollywood Walk of Fame

MAX FACTOR SR

POLISH 1872-1938

Maksymilian Faktorowicz, commonly known as Max Factor Sr, was a pioneer for the modern cosmetics industry. He is famous for the Pan-Cake foundation he created for Hollywood, as the arrival of Technicolor made traditional greasepaint look terrible. Noticing how popular it was with actresses, his son convinced him to sell Pan-Cake to the public, therefore becoming the first commercially available foundation. It is still sold today, although Factor never saw how successful it became as he died the same year it was released.

In 1920, Factor coined the term 'makeup' as in to 'make up ones face.' Until this point, makeup had been associated with the theatre

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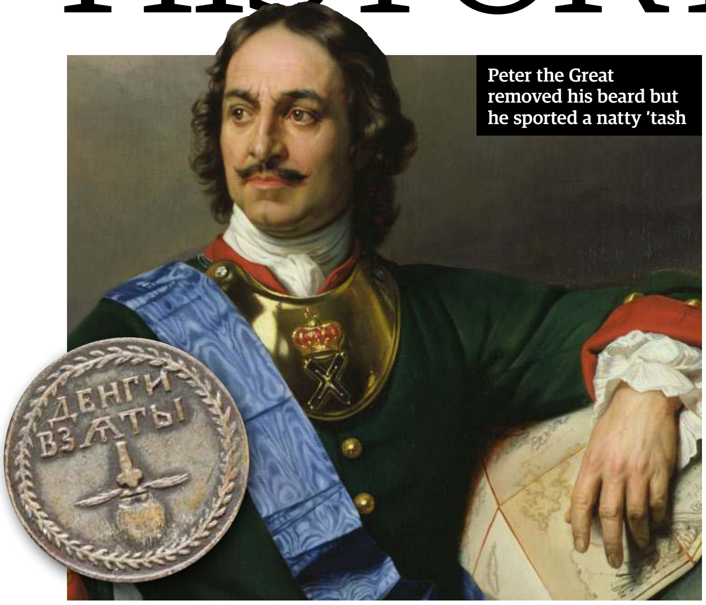
HISTORY ANSWERS



Peter the Great removed his beard but he sported a natty 'tash

Why did Peter the Great ban beards?

Harriet Baden

Back in the 17th century, Russia was a rather insular country, lacking a navy and a well-trained army. It also struggled economically and scientifically so, in a bid to modernise his country, Tsar Peter I made a radical decision to don a disguise and find out how Western Europe did it. On his grand tour, he learned about the advances in shipbuilding and he visited factories, museums and arsenals. He also noted that the modern Western Europeans did not have beards. That, he felt, was very important.

When Peter returned to Russia in 1698 and enjoyed a welcoming reception, he demanded that every man – except clergy and peasants – should clear his face of hair. He promptly whipped out a barber's razor and began to shave the beards from the faces and necks of his aghast courtiers. Police were later instructed to do the same to any hairy-faced man they saw in the streets. Suffice to say, the ban didn't go down well with his subjects.

It was opposed by the Russian Orthodox Church, which believed it to be blasphemous, and he eventually allowed men to retain their beards as long as they paid a tax and carried a copper or bronze token as proof. This fee – 100 rubles for the wealthy and a kopek for commoners – remained in placed until 1772.

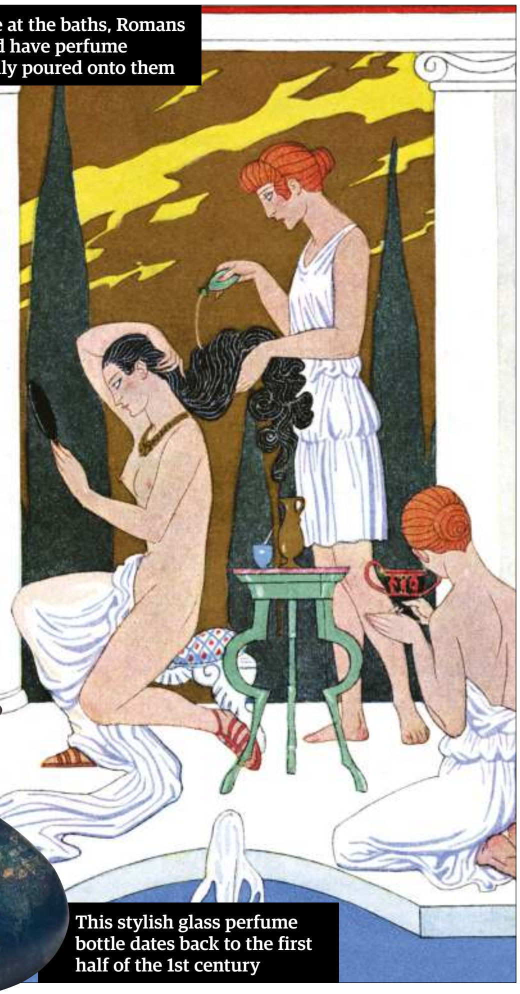
How did the Romans stay smelling fresh?

Neil Comber

Although the Romans were fanatical about hygiene and had high standards of cleanliness, Ancient Rome was a challenging environment. Despite the prevalence of baths and toilets, the air ran thick with the smell of sweat, animals and waste. Romans would counter this by dosing themselves in perfume and even bathed and soaked their clothes in it.

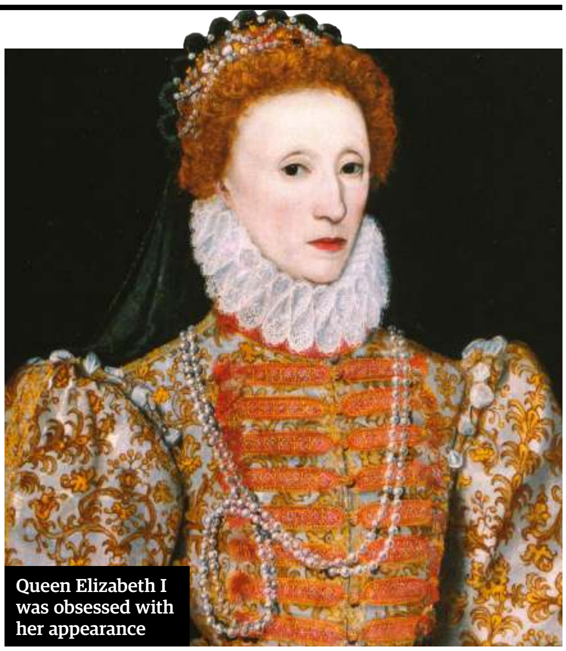
Perfume-making workshops created large quantities of the stuff, using oils as the carrier that made the fragrance slow to diffuse. They often opted for olive or almond oil and added plant-based ingredients such as flowers, woods, resins, seeds and leaves. Animal-derived scents were the most desired – the glandular oils of the musk deer and civet cat were popular.

Perfumes were rubbed or poured on and scents were created for different occasions. Attempts were also made to mask foul smells en masse. Pliny the Elder described the ingredients and methods of perfume making and writes of rose-scented water being sprayed in theatres.



While at the baths, Romans would have perfume literally poured onto them

This stylish glass perfume bottle dates back to the first half of the 1st century



Queen Elizabeth I was obsessed with her appearance

What was Elizabeth I's beauty regimen?

Rosie McCrae

As Elizabeth aged, her trusted ladies would spend hours each day creating the impression of desirably flawless, pale skin. They would layer ceruse – an expensive ointment made up of white lead and vinegar – on to her lined and wrinkled face, neck and hands. A red dye mixed with mercuric sulphide was then placed on her lips and cheeks while a black lead sulphide called kohl was used to outline her eyes. A reddish-coloured wig hid her balding hair and her forehead was increased by plucking back her hair line. Her eyebrows were plucked, making them arched.

Next month's topic is the Byzantine Empire, send your questions to **Facebook** /AllAboutHistory **Twitter** @AboutHistoryMag

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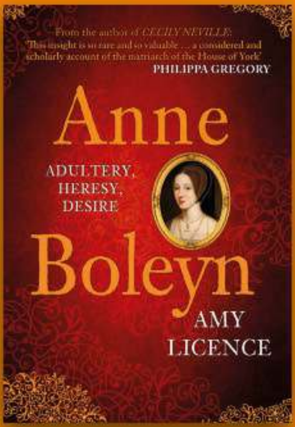
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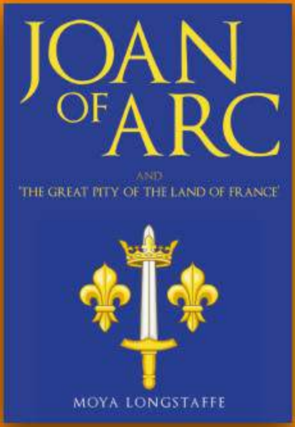
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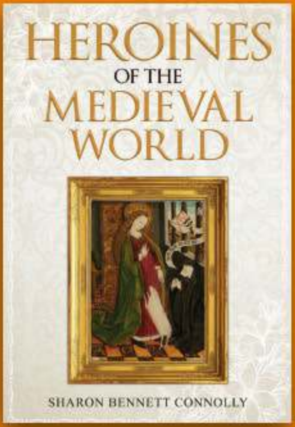
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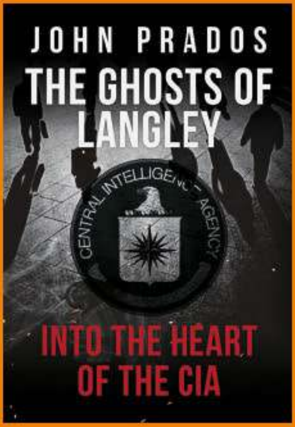
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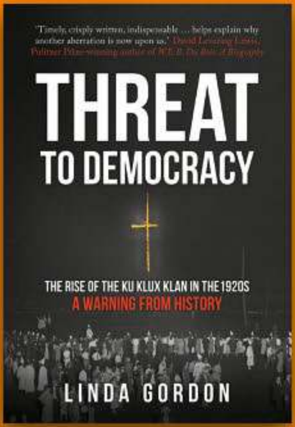
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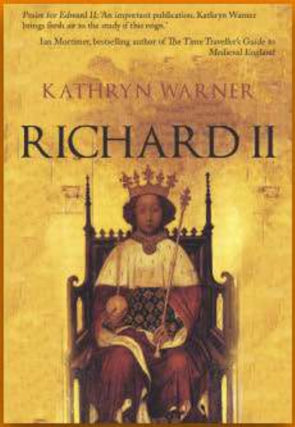
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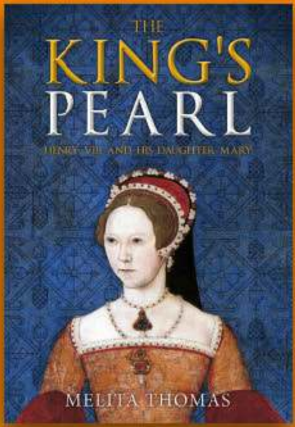
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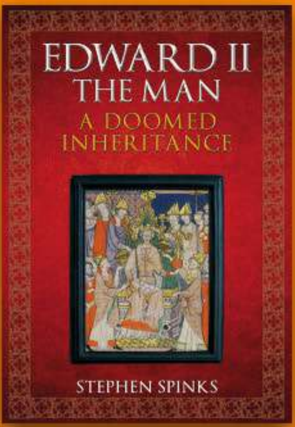
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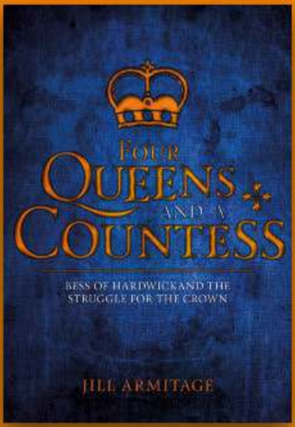
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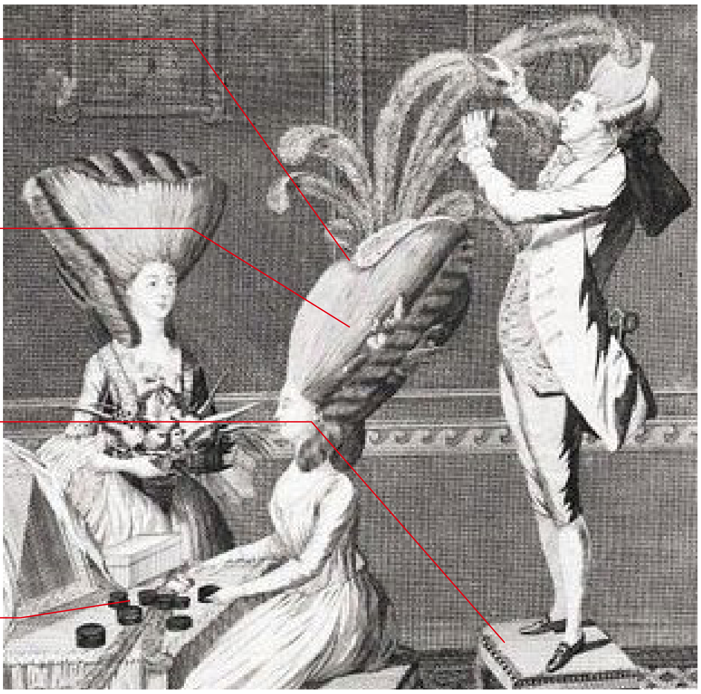
How to GET A BAROQUE HAIRSTYLE

DRESS YOUR HAIR IN A COIFFURE THAT TURNS HEADS, LIKE THE IT-GIRLS IN VERSAILLES PARIS, 1700S

In the 18th century, more was more. Extravagance was the leading principle in art, music, architecture and, of course, fashion. Seldom have hairstyles been so wonderful and fantastic as during the Baroque period.

Ladies all over Europe wanted to imitate the elaborate styles of the French court, which took inspiration from everything from political alliance to major life events.

While the likes of Madam de Pompadour would employ a team of servants to create her giant coiffures, beauty blogger Lucy Kyselica explains how you can do it yourself. For more of her historic style tips, visit **loepsie.com.**



Apply a pomade

Prepare a mixture of beef marrow or lard, hazelnut oil and a few drops of lemon essence to set the hair.

Style scaffold

Use wool, tow, a wire frame, or whatever bulky material you deem appropriate to enlarge the hairstyle.

Seek assistance

To reach maximum height, request help from a professional and provide them with a step-stool for better access.

The powder machine

Use this bellows-like device to blow an even amount of powder onto the hair for a fashionable look.

WHAT YOU'LL NEED...

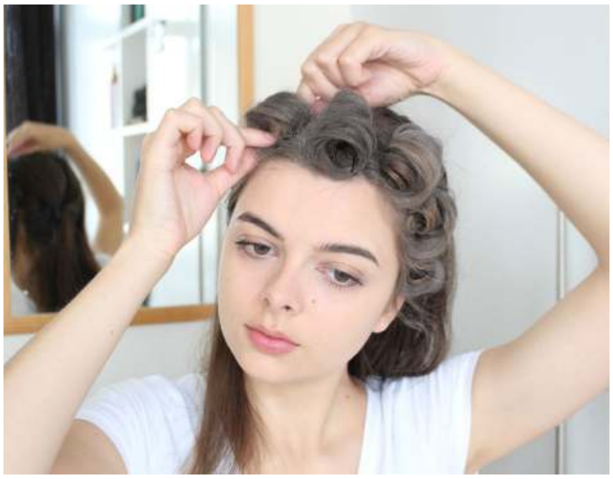
POMADE

POWDER

CUSHION

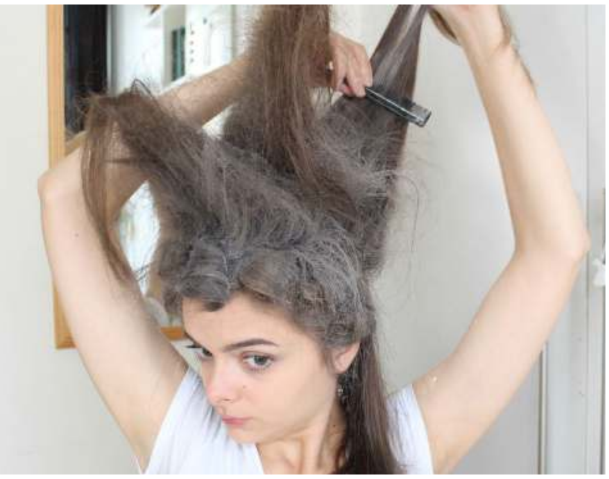
CURLING IRON

ACCESSORIES



01 CURL AND ROLL

Divide your hair into front and back sections by parting it parallel to the face, about two inches in and down just behind the ears. Split the front hair into two-inch sections and coat each in a good amount of pomade, then apply powder. Curl the section with a heated curling iron, roll it up and pin above the hairline. Repeat with all of the front hair.



02 FRIZZ YOUR HAIR

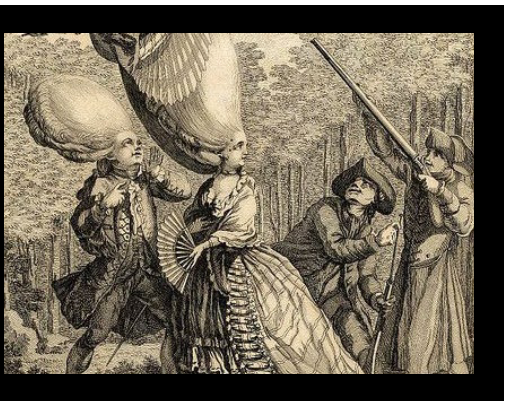
Separate the remaining hair in two. Tie the back section away. Going by two-inch sections again, frizz the front hair by coating it with sufficient pomade and powder, and back-combing it. Hold the hair firmly away from the head and press the comb towards the head so that the hair forms a mat and stands upright.

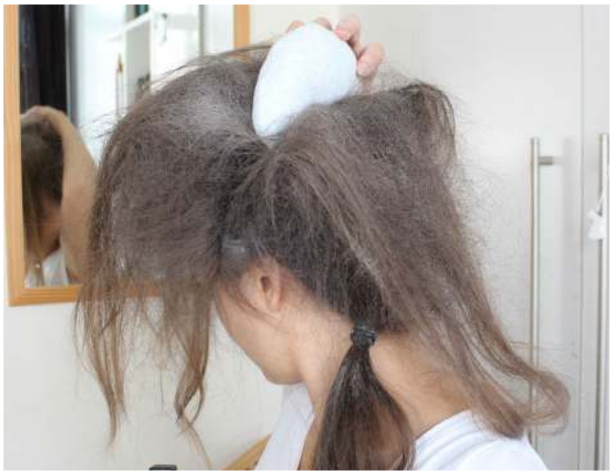
How not to... maintain personal hygiene

In 1768, a letter appeared in *The London Magazine* in which a young man expressed his concern for the health of women after having witnessed the undressing of his elderly aunt's hair. When the hair dresser "opened her head", as he called it, the gentleman was met by an incredible stench caused by layers of pomade, powder and sweat, which had been confined in the coiffure for nine weeks. The smell was bad enough but there was more.

As the hair was being combed out, swarms of little bugs could be seen frantically running around in different directions. The hairdresser assured the gentleman that the bugs couldn't spread to different parts of the body, for they were unable to break through the barrier of powder and pomade.

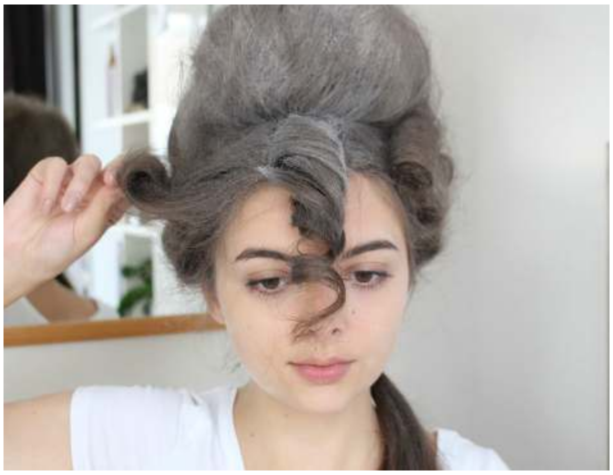
The greatly disturbed gentleman published this graphic description in an attempt to restore ladies' former cleanliness – it had no effect.





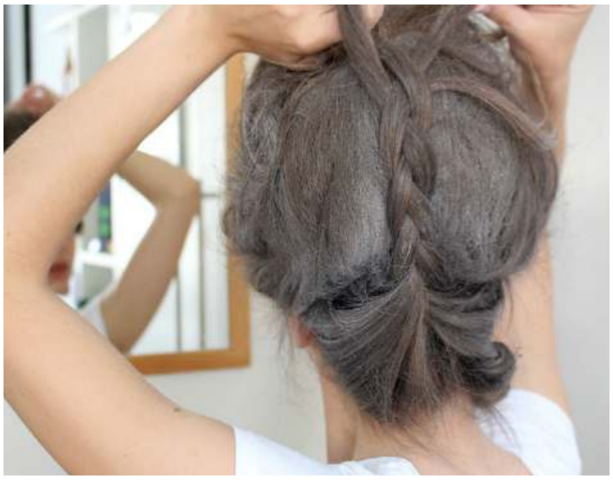
03 PIN CUSHION

Place an arrowhead-shaped cushion in the centre of the frizzed hair. You can now pin the frizzed hair to the cushion from all sides, securing the hairstyle and reaching the desired shape. Make sure that the cushion is thoroughly covered and disappears into the style – it will help support a hat or accessory later on.



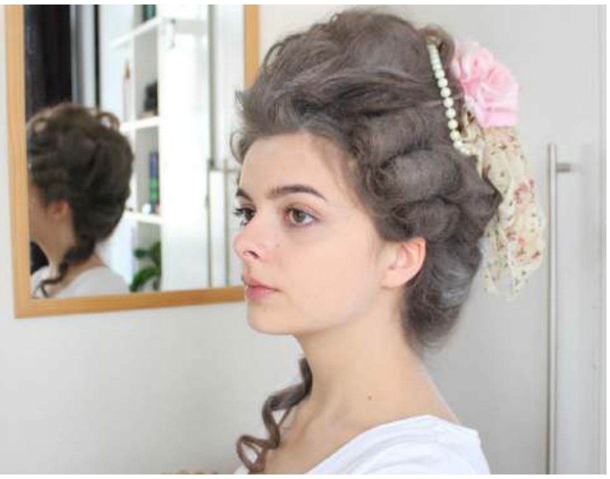
04 STYLE YOUR STRANDS

Starting above the ear, unpin a curl. Coat it with pomade and powder, and frizz it thoroughly. Smooth the outside of the strand and roll it towards the scalp so that it forms a little egg. Repeat to form three curls on each side. Frizz the remaining hair, pin it to the cushion on top and smooth down the front.



05 PLAIT TO FINISH

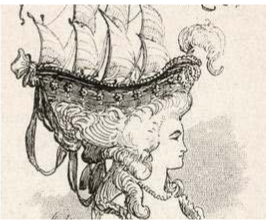
Untie the back hair, comb it well and coat it with pomade and powder. Create one curl on the side of the neck, which will hang down gracefully over the shoulder. Plait the rest of the hair before pulling it up and pinning it to the cushion. Spread out the plait by gently tugging at the sides to make it wider.



06 ACCESSORISE

We're almost there! Protect your face with a powdering cone and ask someone to blow powder onto your coiffure using the powder machine. Make sure you get a nice even coating. If needed, fill any gaps using a powdered swan-down puff. Lastly, accessorise your do using pearls, ribbons, feathers, silk flowers or an evening bonnet. Et voilà, you're done!

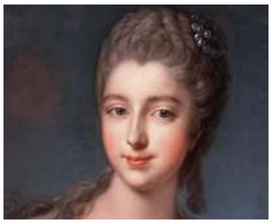
4 FAMOUS... PARISIAN HAIRSTYLES



À LA BELLE POULE

PARIS, 18TH CENTURY

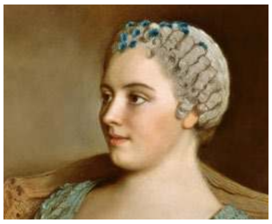
The victorious French battleship La Belle Poule was commemorated by adorning the hair with a (rather large) miniature.



À LA POMPADOUR

PARIS, 18TH CENTURY

Madame de Pompadour, mistress of King Louis XV and great fashion idol of her time, first introduced the iconic pouf.



TÊTE DE MOUTON

PARIS, 18TH CENTURY

The 'sheephead' was a popular French mid-century hairstyle featuring a row of defined curls along the front of the hair.

À L'INOCULATION

PARIS, 18TH CENTURY

When vaccines proved to be successful against smallpox, ladies celebrated – of course – with an allegorical hairstyle.

Da Vinci

WAS HE REALLY A GENIUS?

Famed as the inventor of many machines that didn't actually work and known during his lifetime for abandoning projects, has the original Renaissance man been overrated?

Written by Jessica Leggett

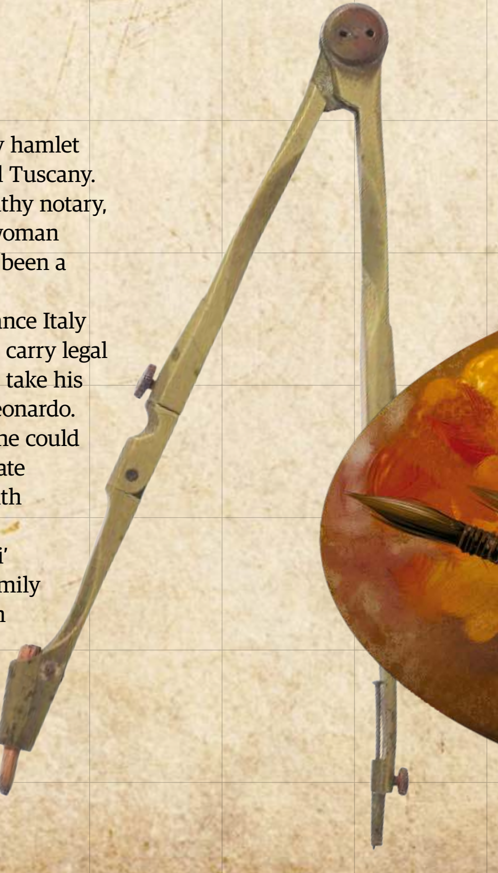
Leonardo da Vinci has captivated the world for centuries, acclaimed as a polymath who produced breathtaking art, engineered fantastic flying machines and uncovered secrets about the body and the wider world. This reputation inspired Dan Brown's bestseller *The Da Vinci Code* as well as many other far-fetched theories. This is an incredible legacy for a man who painted no more than 20 panel paintings in his entire career, never completed a sculpture and was slow to find fame in his own lifetime.

He did leave behind a library's worth of private diaries and notebooks full of his scientific observations and ideas for inventions but few of his contraptions went beyond an initial sketch. Modern-day engineers have also found that more than one of them would never work. So how did da Vinci posthumously earn such high praise – and does he deserve it?

It's perhaps a sign of our distorted view that we even call the artist 'da Vinci' at all. Leonardo was born in 1452, in Anchiano, a tiny hamlet near the small town of Vinci, in rural Tuscany. He was the illegitimate son of a wealthy notary, Ser Piero d'Antonio da Vinci, and a woman known as Caterina, believed to have been a peasant and possibly a servant.

Being a 'non legittimo' in Renaissance Italy was not a disgrace but the status did carry legal limitations. In particular, he couldn't take his father's surname – he was simply Leonardo. As an adult, the artist asked Piero if he could adopt the title 'da Vinci' to differentiate himself from other Tuscan artists with the same name.

His father agreed, though 'da Vinci' wasn't his legal name either – his family had adopted the suffix to distinguish themselves from others (in Italian it just means 'of Vinci'). When Leonardo went to Milan, he called himself 'Leonardo the Florentine' but the old name had stuck.



"This reputation inspired Dan Brown's bestseller The Da Vinci Code as well as many other far-fetched theories"

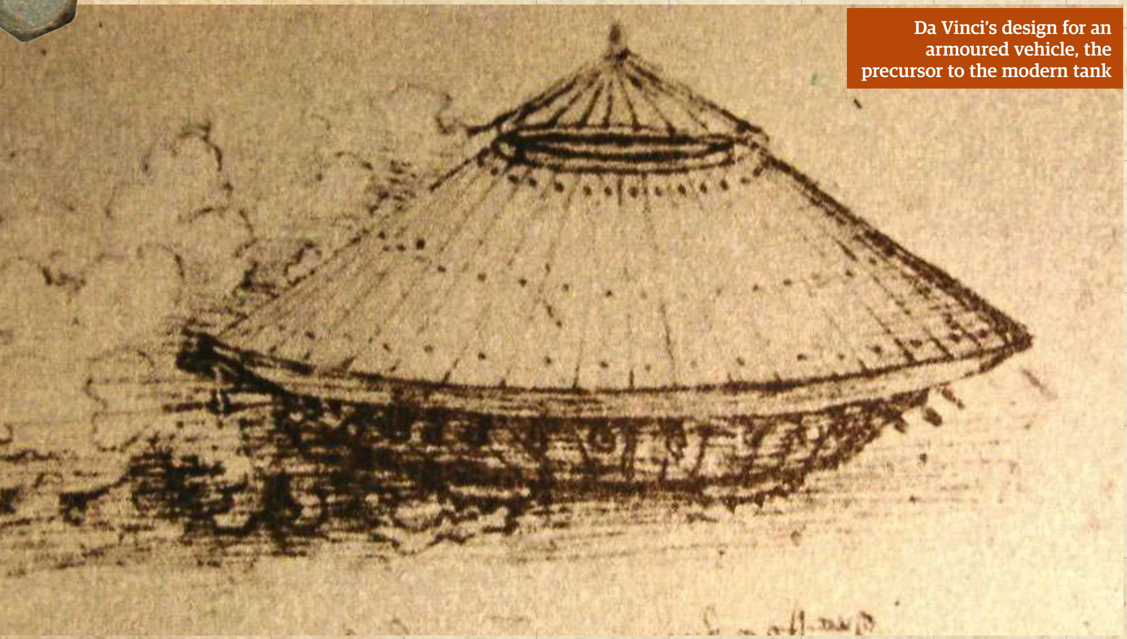
Leonardo was fortunate that Piero acknowledged him and his father even brought him to live in Florence with him when the future artist was five. However, the boy's illegitimacy barred him from becoming a notary like his father, so he was only taught basic mathematics and how to write, rather than given the formal education of higher-ranking children.

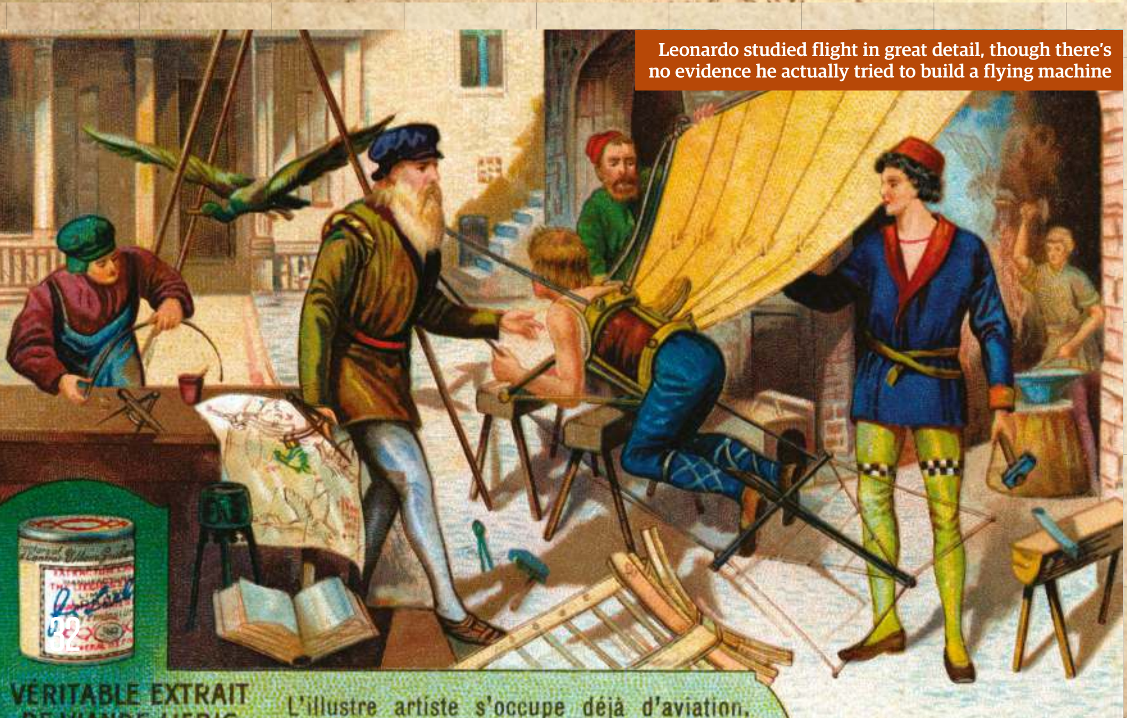
Possibly because he'd shown skill at drawing, in 1466, Piero apprenticed his 14-year-old son to Andrea del Verrocchio, a renowned artist patronised by the powerful Medici family. Under his tutelage, da Vinci was given a practical education not only in painting and sculpture, but also metalwork and engineering. The apprentice proved a quick study and began to outshine his teacher. It is said that the angel da Vinci painted for Verrocchio's *The Baptism of Christ* was so magnificent that his master refused to pick up a paintbrush ever again.

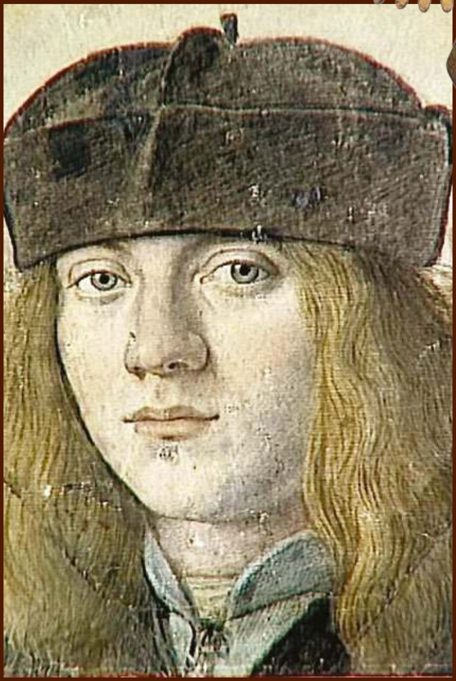
One of Verrocchio's most important lessons was that he insisted his pupils paint as accurately as possible. So, under his master's guidance, da Vinci was introduced to the science of anatomy to better illustrate the human body. Da Vinci's anatomical drawings are as fascinating as his artwork, full of rich detail, and he analysed various aspects of the human body from the skeleton to embryos.

His sketches of ox and pig hearts and later the heart of a 100-year-old man led to his subsequent observations about the heart's function that were far beyond medical thinking at the time. For instance, he detailed how it was actually a muscle with four chambers, and that its arterial valves opened and closed through blood flow. His analysis also led him to give the first known description of coronary artery disease, which he suggested could occur if the arteries were to "fur up".

If there is anything that demonstrates da Vinci's devotion to his pursuit of knowledge, then it is certainly his anatomical drawings. Not satisfied with just performing dissections on animals, he managed to secure human corpses that he dissected and examined for his research.


Da Vinci's design for an armoured vehicle, the precursor to the modern tank


Leonardo studied flight in great detail, though there's no evidence he actually tried to build a flying machine
VÉRITABLE EXTRAIT
L'illustre artiste s'occupe déjà d'aviation.



THE MASTER'S APPRENTICE

How da Vinci's pupil was so devoted to him that he spent his life ensuring his tutor's legacy

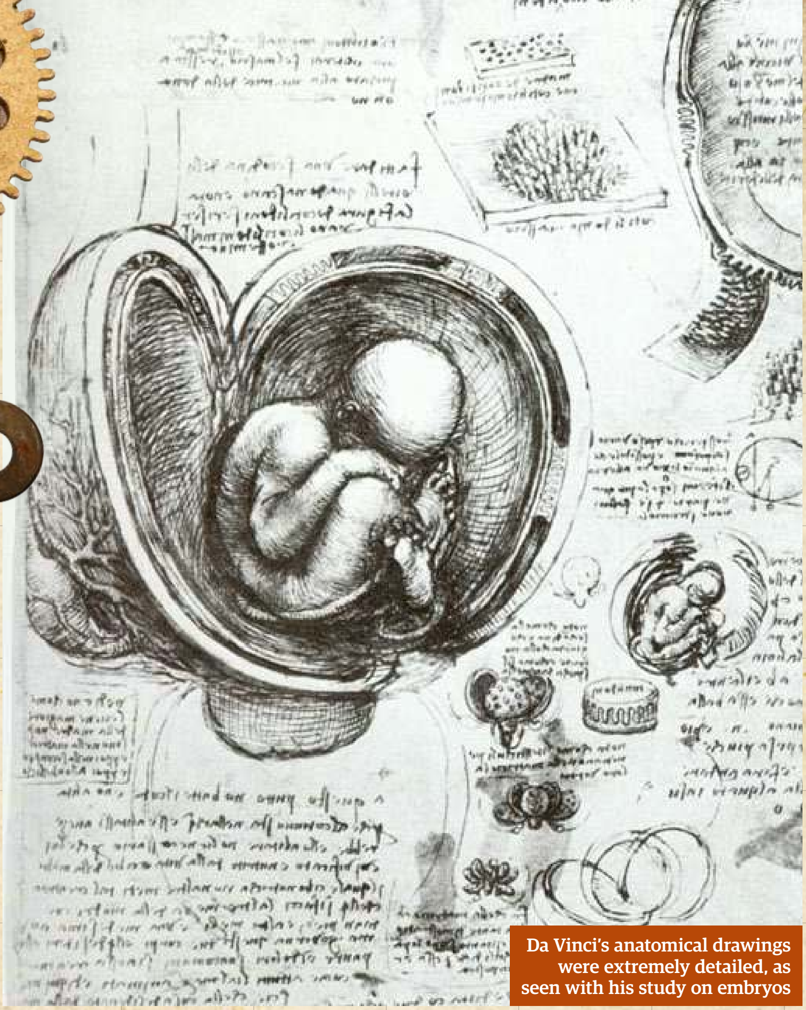
The son of a minor Milanese noble, Francesco Melzi met da Vinci in 1505, aged 15, and joined his household soon after. He became da Vinci's faithful companion and pupil, accompanying him wherever he went. Unlike some of da Vinci's other students, Melzi was actually a talented artist whose style emulated his master's so much that it has proven difficult to associate the correct artwork with the correct painter.

It has often been argued, most notably by Sigmund Freud, that Melzi's loyalty to da Vinci was to the detriment of his own artistic accomplishments, which were overshadowed. For centuries it has been debated whether da Vinci and Melzi were actually lovers but today most historians agree that it was more of a father and son relationship.

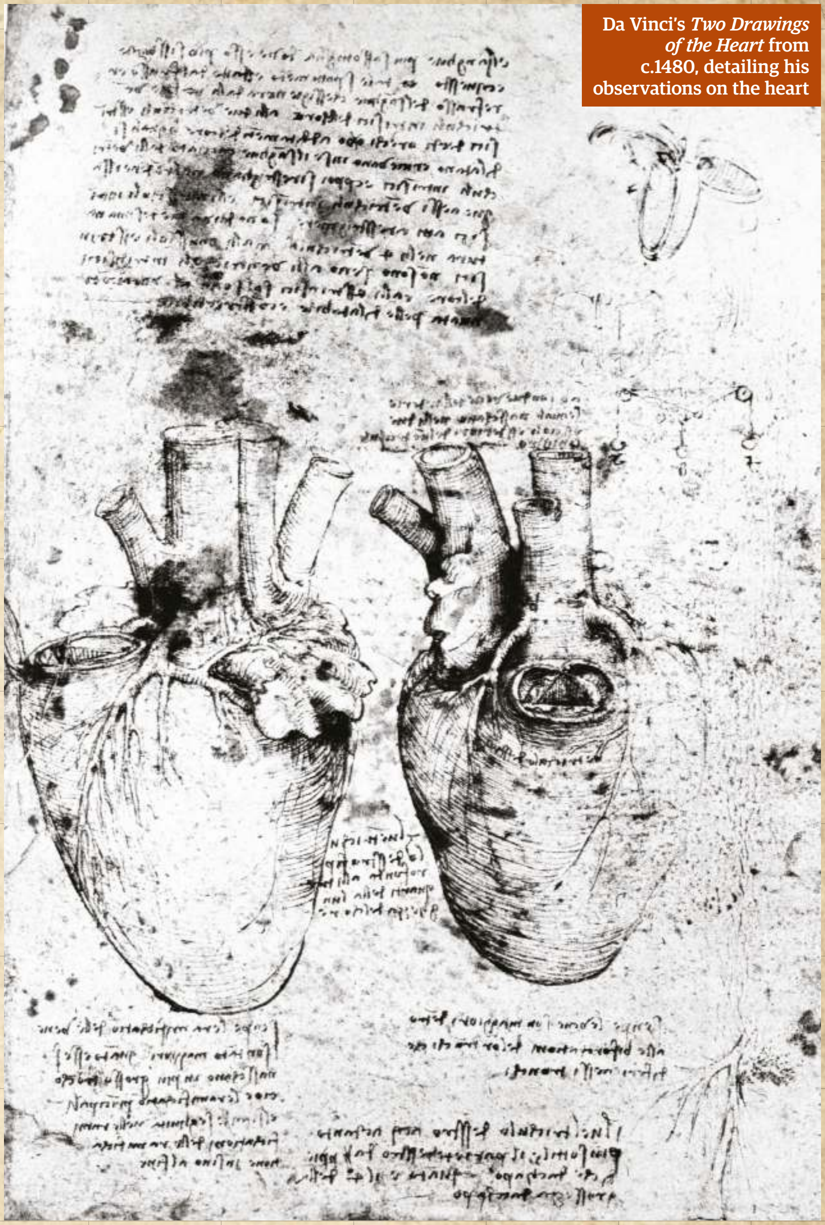
It was Melzi who inherited his master's vast collection of manuscripts and drawings upon his death and the only one of da Vinci's pupils to remain with him until the end of his life. He remained devoted to preserving da Vinci's legacy and attempted to compile the genius' notes so that they could be shared with the world. Despite hiring workers to help him sort through da Vinci's papers, Melzi failed to see them published during his lifetime.

His son, Orazio, inherited the works, unaware of how important they were, and caused their dispersion across Europe. It was only when the manuscripts and drawings were slowly rediscovered in the 19th century that da Vinci's ideas were brought to mainstream attention.

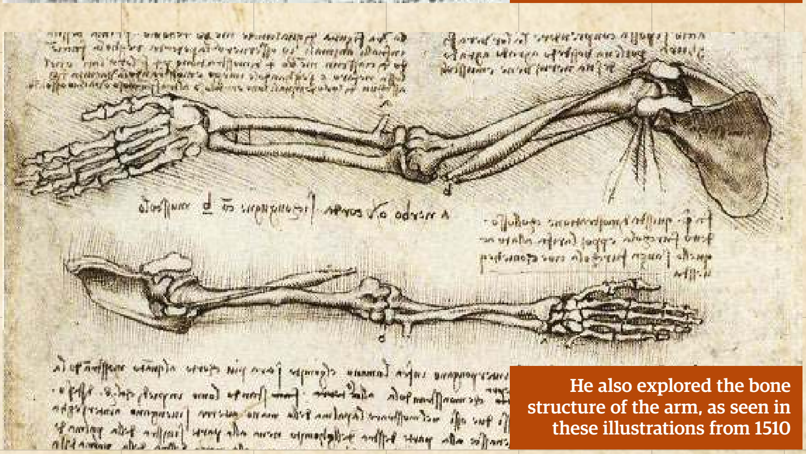
ABOVE: Francesco Melzi stayed with da Vinci for the last years of the artist's life



Da Vinci's anatomical drawings were extremely detailed, as seen with his study on embryos



Da Vinci's *Two Drawings of the Heart* from c.1480, detailing his observations on the heart



He also explored the bone structure of the arm, as seen in these illustrations from 1510

At the time there was no real form of preservation in place for dead bodies and so they would have been in a revolting state of decay, with a strong, pungent smell. The fact that da Vinci was willing to go through such a gruesome experience shows how important he considered his research.

However, it is also a reflection of a man whose attention could be easily diverted. His original purpose had been to improve the accuracy of his drawings and yet he became preoccupied with understanding biology instead. It was a pattern that would repeat itself throughout his life, dooming to leave so many projects unfinished. Even his most famous artworks, the *Mona Lisa* and *The Last Supper*, two of the most celebrated masterpieces of all time, took him years to finish.

It is possible to see how da Vinci's interests changed throughout his life by studying his many codices that still exist today. Comprising his loose papers and drawings, they were eventually gathered and bound centuries after his death.

> "If there is anything that demonstrates da Vincis devotion to his pursuit of knowledge, then it is certainly his anatomical drawings"

The largest one, the *Codex Atlanticus*, contains over 1,000 of da Vinci's papers, musing on a wide range of areas from hydraulics to mathematics to astronomy and botany. "Describe," he instructs himself in one notebook, "what sneezing is, what yawning is, the falling sickness, spasm, paralysis, shivering with cold, sweating, fatigue, hunger, sleep, thirst, lust." The codices provide an intriguing insight into the mind of a man who could conceive unique and extraordinary ideas on one page and write his shopping list on the next.

Interestingly, da Vinci was not oblivious to his procrastination, once lamenting to God, "Tell me if anything was ever done." Undoubtedly, his greatest strength was also the cause of his greatest weakness – a mind that could conceive infinite possibilities but also prevented him from fully achieving them. His desire to pursue knowledge and perfection superseded everything in his life. His work ethic was unusual, spending entire days devoted to his work with no food and little sleep before taking for breaks for days at a time to intensely analyse his work.

Although da Vinci's interest in anatomy proved to be life-long, he left Verrocchio's workshop after just over a decade in 1478. Two years previously, da Vinci was charged with sodomy with a goldsmith's apprentice alongside three other men.

Although they were all eventually acquitted, the artist was certainly arrested for at least a brief time. This was long enough to have considered the punishments, which could vary from a fine to being burnt at the stake. It's perhaps no shock that the incident is said to have deeply affected him.

Leonardo became a notoriously private man dedicated to his work and developed a habit of buying caged birds only to set them free. Equally, in the coming years he designed a machines specifically for escaping a prison and another for tearing the bars off a window.

Perhaps fearing that his reputation had been blackened in Florence, he relocated to Milan in 1482. Aware Ludovico Sforza, the regent and later Duke of Milan, was in need of a military engineer after years of being under siege from rival powers, he wrote to the noble, detailing ideas for portable bridges, cannons and armoured vehicles. "I have methods for destroying any fortress or redoubt, even if it is founded on solid rock," he wrote. He only mentioned his skills as an artist and architect as an afterthought.

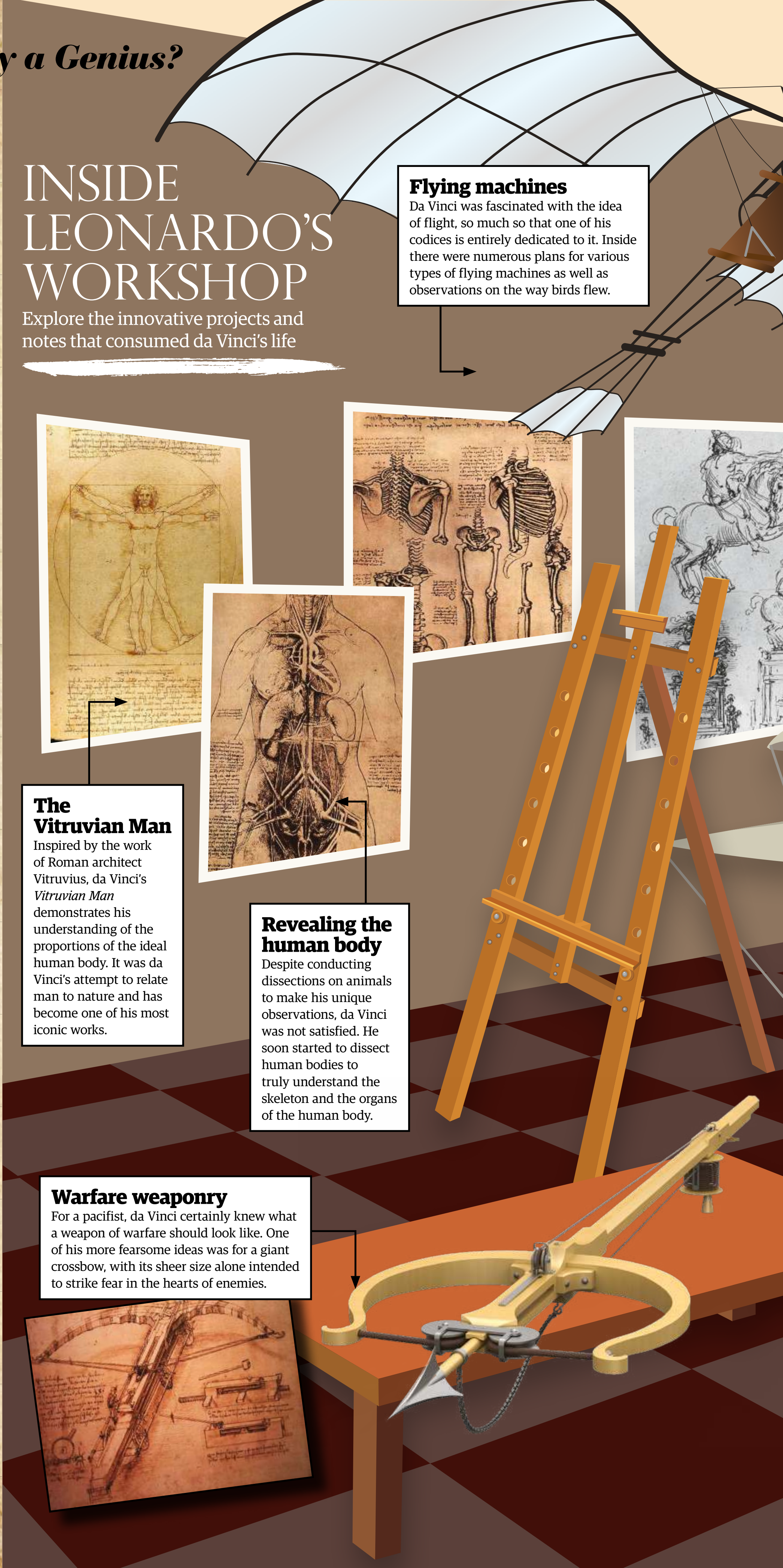
> *"Leonardo also made several stabs at drawing flying machines"*

Sforza became da Vinci's prolific patron but the duke did not commission any of his military ideas. In fact, his first job was to fix Sforza's plumbing. After that, he designed pageants for the Milanese court and painted portraits.

While this work was ephemeral, it gave da Vinci more time to indulge his passion projects, including machinery. As well as considering the relative merits of pistons, pulleys and ball bearings in the *Codex Milan*, it was during his time that he filled his notebooks with ideas for his most outlandish works of engineering like the armoured tanks and siege weapons he pitched Sforza.

In recent years, engineers have tried to build them and have confirmed that neither would work. In particular, the gears inside the armoured vehicle were designed to work against each other. Some have speculated that such a glaring fault must have been intentional – perhaps it was a means of protecting his intellectual property? An ardent few choose to believe it was an act of self-sabotage by a man who was a pacifist at heart.

However, it wasn't just the war machines that didn't work – da Vinci also made several attempts at drawing flying machines. The first of these was the aerial screw, which some describe as Leonardo's helicopter, from 1483. It would allow for four men to stand at the screw's base, where they would rotate until it summoned enough power to lift off the ground. The sketches were unclear as to whether the men were supposed to stay on the contraption and ride it like some kind of nausea-inducing fairground attraction.



INSIDE LEONARDO'S WORKSHOP

Explore the innovative projects and notes that consumed da Vinci's life

Flying machines

Da Vinci was fascinated with the idea of flight, so much so that one of his codices is entirely dedicated to it. Inside there were numerous plans for various types of flying machines as well as observations on the way birds flew.

The Vitruvian Man

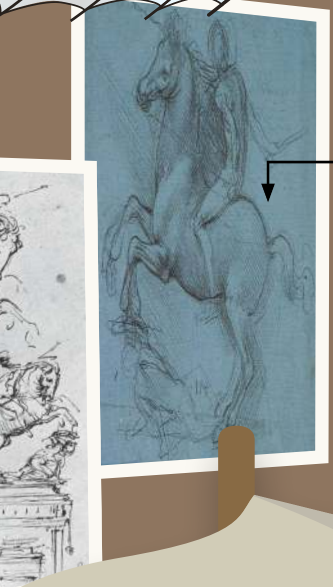
Inspired by the work of Roman architect Vitruvius, da Vinci's *Vitruvian Man* demonstrates his understanding of the proportions of the ideal human body. It was da Vinci's attempt to relate man to nature and has become one of his most iconic works.

Revealing the human body

Despite conducting dissections on animals to make his unique observations, da Vinci was not satisfied. He soon started to dissect human bodies to truly understand the skeleton and the organs of the human body.

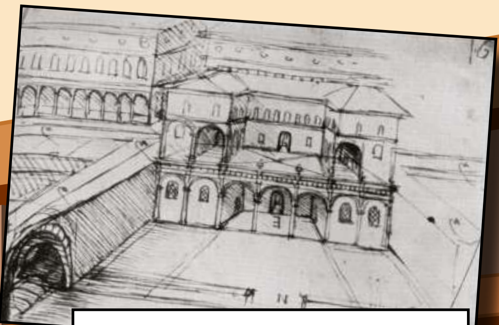
Warfare weaponry

For a pacifist, da Vinci certainly knew what a weapon of warfare should look like. One of his more fearsome ideas was for a giant crossbow, with its sheer size alone intended to strike fear in the hearts of enemies.



Draft sketches

Da Vinci was known to produce a number of draft sketches before actually starting an art project. In some cases where the project never materialised or no longer exists, it can still be envisioned from the sketches that survive today.

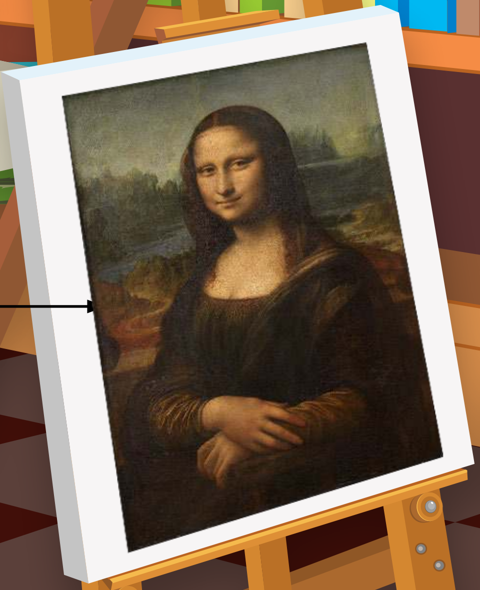


The ideal city

When Milan's population was decimated by plague, da Vinci made plans to reinvent the city. His 'ideal city' had a new sanitation system and widened roads, as Milan's cramped streets had exacerbated the plague. Unfortunately, da Vinci's plans required the whole city to be demolished and so were considered too grand to attempt.

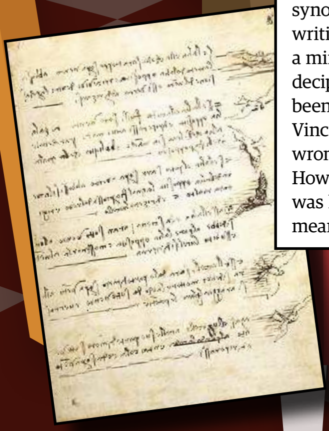
Da Vinci's codices

There are thousands of papers that make up da Vinci's codices. The polymath always wrote down his thoughts and observations but interestingly enough, he was not too concerned about maintaining an order – mundane items such as shopping lists can be found alongside his unique theories and ideas.



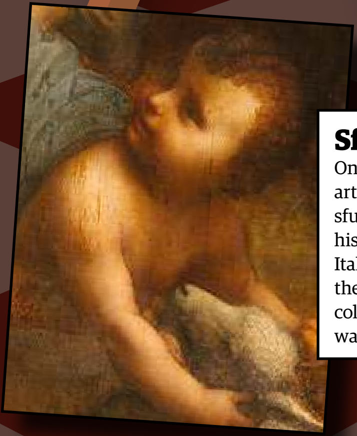
The mysterious Mona Lisa

The Mona Lisa is the culmination of da Vinci applying his scientific knowledge to his artwork, most specifically in regards to her proportions, which he worked out mathematically. Her ambiguous smile, whether it is happy or sad, has continued to provoke interest for centuries.



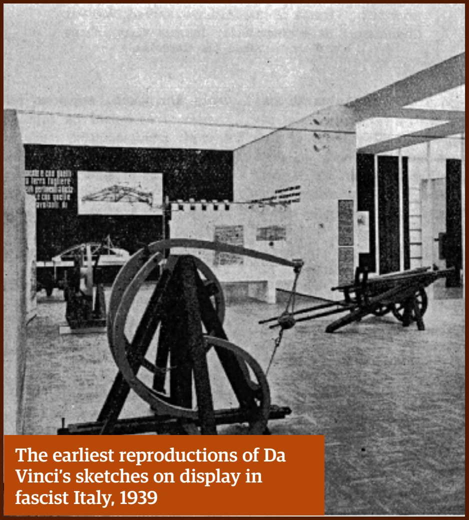
Mirror writing

One of the techniques that has become synonymous with da Vinci is mirror writing. He wrote from right to left and so a mirror is required to properly read and decipher his notes. Various reasons have been cited for this – for example, that da Vinci may have wanted to prevent the wrong people from decoding his work. However, it could simply be because he was left-handed and writing backwards meant that he couldn't smudge the ink.



Sfumato skills

One of the reasons as to why da Vinci's art has become so iconic is because of the sfumato technique that he used to create his paintings. Literally translated from Italian as 'shaded off', sfumato produced the soft graduation between tones and colours that da Vinci is famous for and was revolutionary to his contemporaries.



The earliest reproductions of Da Vinci's sketches on display in fascist Italy, 1939

THE MODEL INVENTOR

Roberto Guatelli popularised the idea that Leonardo was an engineer

In his lifetime, Leonardo was celebrated as an artist and was lauded for his detailed observations in the 19th century when his notebooks were rediscovered. But it wasn't until the 20th century that Leonardo was regarded as an inventor. This was largely due to Roberto Guatelli, a science and engineering graduate from the University of Milan who made a career out of building and exhibiting 'interpretations' of Da Vinci's sketches. This began in 1939, when Benito Mussolini's fascist government was looking for a hero to demonstrate Italy's historic dominance over science, technology and the arts. Guatelli was hired with a number of others to create models for major exhibition in Milan. The Italian Ministry of Culture later took this show on the road, sending Guatelli and the models first to New York in 1940 and then to Tokyo for the remainder of the interwar years.

After World War Two, the model maker went back to the US. Calling himself 'Doctor Guatelli' his new show included 56 Leonardo reproductions that he made himself from oak, walnut, brass and bronze. In 1951, Guatelli found a new patron in IBM. The computing giant was keen to attach its name to Leonardo's, sponsoring Guatelli's displays at schools, offices, labs, museums , galleries and IBM's own headquarters in New York throughout the 1950s. The tech company also bought several of Guatelli's models so that they could be publicly donated to museums in Italy.

While Guatelli's exhibits did a lot to raise the profile of Leonardo's ideas — as well as IBM's brand — they gave the false impression that he had built his sketches and, whats more, if you took them out of Guatelli's display case that the models would actually work.

Modern engineers have determined that it would have been too heavy to leave the ground.

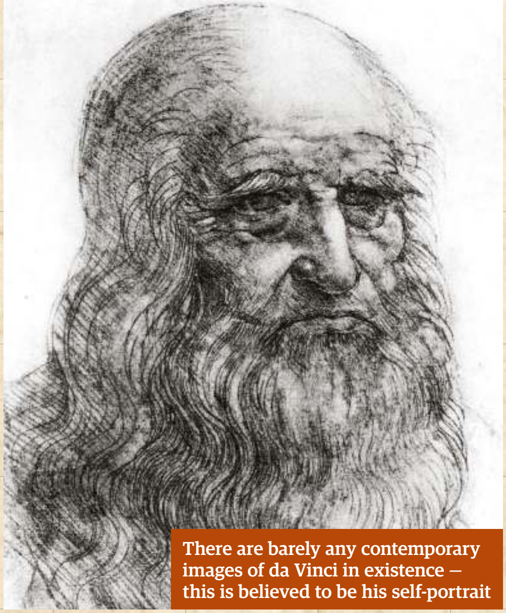
Another one of these flying machines is from 1485 following months of observing the flight of birds. Known as the orinthopter, its name is a combination of the Greek for 'bird' and 'flying.' It's perhaps no surprise that this vehicle required the pilot to lie in the prone position, using his arms and legs to push and pull levers that would operate the wings. It goes without saying that there's no way this would have worked either.

That's not to say that all of Leonardo's designs were bad. He designed a parachute in 1485 with which a man "will be able to throw himself down any great height without suffering any injury." At first glance, it looks far too heavy, featuring a wooden pyramid frame covered with a sealed linen cloth. However, back in 2000, British skydiver Adrian Nicholas built da Vinci's parachute true to his design and successfully proved that it did in fact work.

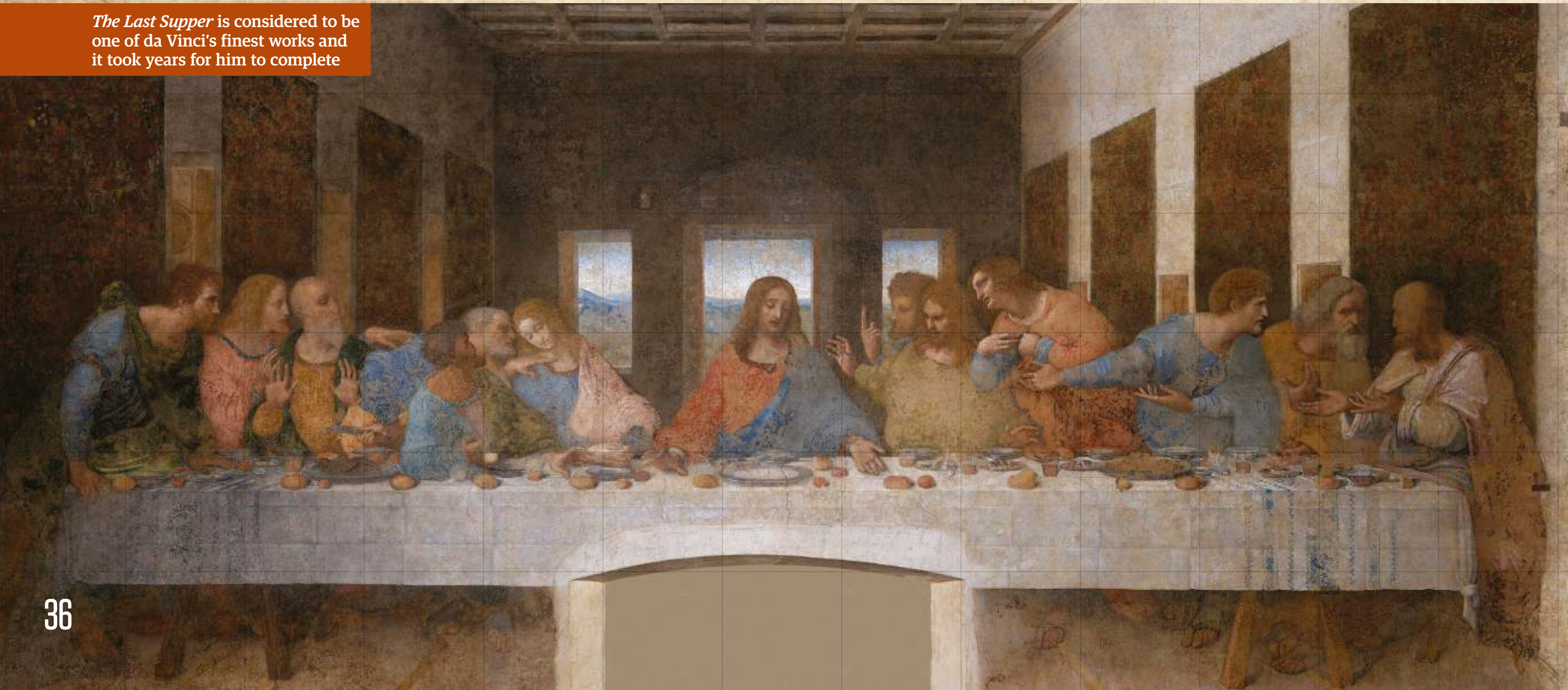
Another of da Vinci's inventions that showcased his knowledge of mechanical engineering was his knight automaton, fondly known as 'Leonardo's robot' today. It had a pulley and cable system that allowed it to move its arms and head independently, as well as to sit up and down, utilising da Vinci's mechanical skills.

Unlike most of da Vinci's ideas, he is believed to have actually built his knight and presented it at a celebration held by Sforza in Milan in 1495. Roboticist Mark Rosheim also built a working replica based on the artist's sketches in 2002.

In 1499, da Vinci was forced to flee Milan after the French invaded and overthrew Sforza. He ended up in Venice, where he came up with the idea for a scuba diving suit, thinking it would enable underwater attacks on enemies when the city was under siege. He devised a suit with cane tubes, connected to a bell-shaped float that would remain above water, ensuring airflow for the diver. Remarkably similar to those that would appear



There are barely any contemporary images of da Vinci in existence – this is believed to be his self-portrait



The Last Supper is considered to be one of da Vinci's finest works and it took years for him to complete

While da Vinci invented a lot of machines, no one tried to make them until long after his death

> “His life was rather solitary but at the same time he earned admiration from some of the most formidable men alive including Sforza”

500 years later, diver Jacquie Cozens proved that the design would actually work in 2003, albeit only in shallow water.

However, it is a mistake to think that da Vinci ‘designed’ these mechanical marvels in a modern sense. He made detailed sketches, which he would annotate with notes, but these were a long way from formal blueprints. Thinking about them in terms of practicality – that is to say whether they worked or not – might also be a mistake.

With the exception of the automaton, da Vinci did not actually try to build any of his sketches. In fact, he didn't have a workshop and the means to make his ideas concrete. While he observed much during his studies, he lacked an understanding of friction and other principles he would need to make many of his ideas work. Tellingly, he didn't publish any of his sketches – instead he hid them away in his notebooks for private consideration.

It might be better to think of da Vinci's ‘inventions’ as a means of recording or making sense of the results of his studies. After all, his armoured tank was based on the shell of a tortoise, while his flying machines were interspersed with his examinations and analyses of bird wings. Even his robotic knight was a logical extension of his detailed anatomical studies.

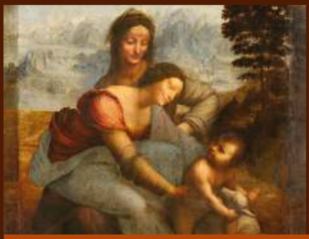
In doing this, da Vinci was arguably very forward-thinking. Today, the plundering of the natural world for design solutions has a whole field of science devoted to it – biomimicry, where scientists try to solve problems by looking at how solutions have evolved in living creatures over many millions of years.

After Venice, da Vinci flitted between Milan and Florence, during which time he was commissioned to paint *The Battle of Anghiari* – the famous unfinished artwork that is referred to as the ‘lost Leonardo’ – among other artworks. By 1513, he was living in the Belvedere in the Vatican, Rome, under the patronage of Pope Leo X.

Just two years later, he created another automaton, a lion, to present to King Francis I.

UNFINISHED BUSINESS

A master procrastinator, here are five of da Vinci's works that he never got round to completing



The three figures have a triangular composition, showing da Vinci's geometry skills

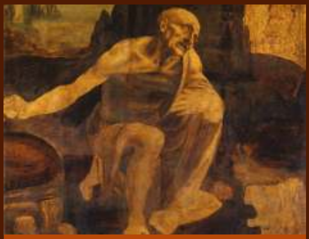
THE VIRGIN AND THE CHILD WITH SAINT ANNE

Da Vinci had spent almost 20 years working on this painting when he died, leaving it incomplete. It depicts the Virgin Mary sitting on the lap of her mother, Saint Anne, while holding a young Jesus, all painted in the famous sfumato technique. Why the painting was left unfinished has led to much speculation but it is most likely because da Vinci's attention was diverted elsewhere.

COLOSSUS

One of Leonardo's greatest disappointments was his unrealized vision, Colossus, a seven-metre bronze equestrian statue. Commissioned by the duke of Milan, the statue provided da Vinco with the artistic challenge that he craved. He completed the clay model in 1493, ready for it to be cast in bronze. However, his work was dashed when the French invaded Milan in 1494 and the duke gave away the 70 tons of bronze set aside for the statue to be melted and turned into cannons to defend the city.

The Sforza monument was finally created in Milan in 1999, 480 years after da Vinci's death



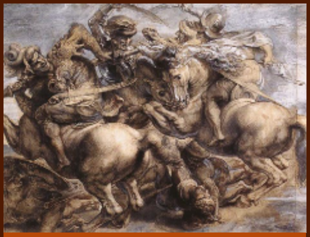
Da Vinci's St Jerome brought together his artistic skills with his knowledge of anatomy

ST JEROME IN THE WILDERNESS

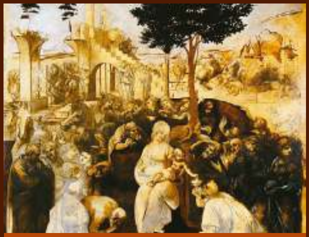
Created circa 1480, this painting is largely regarded as one of Leonardo's masterpieces, despite its unfinished state. A depiction of Saint Jerome's retreat the Syrian Desert, the detail of the sain't neck muscles is considered to be one of Leonardo's first anatomical drawings. To this day, the circumstances surrounding its creation and subsequent abandonment remain a mystery.

THE BATTLE OF ANGHIARI

Leonardo's masterpiece has been missing for centuries and is known as ‘the lost Leonardo’. Only copies of da Vinci's masterpiece, including one by Rubens, still exist, although it is believed that it has been hidden in the hall that da Vinci painted it in. However, it is known that the artist failed to finish the painting. He had experimented with a new painting technique, which produced stunning results, but also meant that the painting could not withstand the elements.



The painting is best remembered by Peter Paul Rubens' copy as the original is lost



The *Adoration of the Magi* is considered to be one of da Vinci's masterpieces

THE ADORATION OF THE MAGI

This painting was commissioned by the Augustinian monks for the monastery of San Donato a Scopeto, near Florence, in 1481. It has been speculated that one of the figures in the far right-hand-side corner, facing away from the others, is actually a self-portrait of da Vinci. The painting was left incomplete when da Vinci left Florence for Milan in 1482.

> "Da Vinci's keen eye and obsessive curiosity led him to observe facts about the natural world"

Just like his earlier robotic knight, the lion could move independently, opening its chest to present lilies to the king in reference to the French royal symbol of the fleur de lys.

Francis, who was the king of France, was so impressed that he employed him and he had moved to live near the Château d'Amboise in a manor provided for him by 1516. As well as planning court celebrations, Leonardo entertained himself by pondering complex geometric puzzles. As it turned out, the king was to be his last patron as he died in France in 1519. According to legend, the two were so close that Francis cradled his head as he passed away.

The Florentine left the majority of his estate, including his thousands of sketches and notes, to Francesco Melzi, his faithful student. For the rest of his life, Melzi remained determined that his master's work would be published for all the world to see. Unfortunately, he was unable to completely sort his master's vast collection of work.

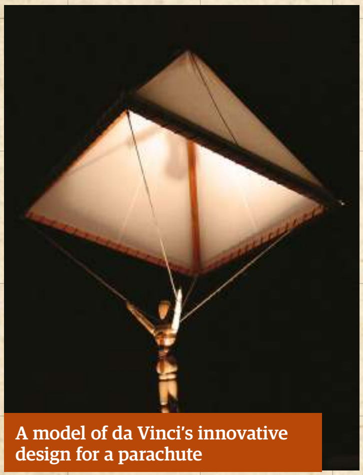
Sadly, after Melzi's death, his son inherited the papers and failed to realise how priceless they were. Sold off piecemeal, they ended up scattered all over Europe and remained hidden from the public for over 200 years. The flaws in some of Leonardo's machines aside, this is undoubtedly the main reason why da Vinci had little impact on engineering and natural philosophy.

So, should we consider da Vinci a genius? He certainly revolutionised the way in which pictures were painted, from the soft-focus sfumato of the *Mona Lisa* to the magnificent *The Last Supper* in the refectory of the monastery of Santa Maria delle Grazie in Milan that he created with tempera and oil on gesso, pitch and mastic. Through his contribution to the maniera moderna ('modern style'), he influenced generations of future artists. While Michelangelo strived for ideal beauty, da Vinci aimed to reproduce reality.

Living before a distinction was made between science and art, da Vinci's keen eye and obsessive curiosity led him to observe facts about the natural world – from the inner workings of the human body to a rudimentary understanding of physics. We remain deeply sceptical about how much he really understood about how things worked. We can also draw the line at calling his sketches 'inventions' – although some of them were more developed than others, at best we can call them innovations as they were never actually created. But his capacity to observe the world in such vivid detail is so singular it can undoubtedly only be called genius.

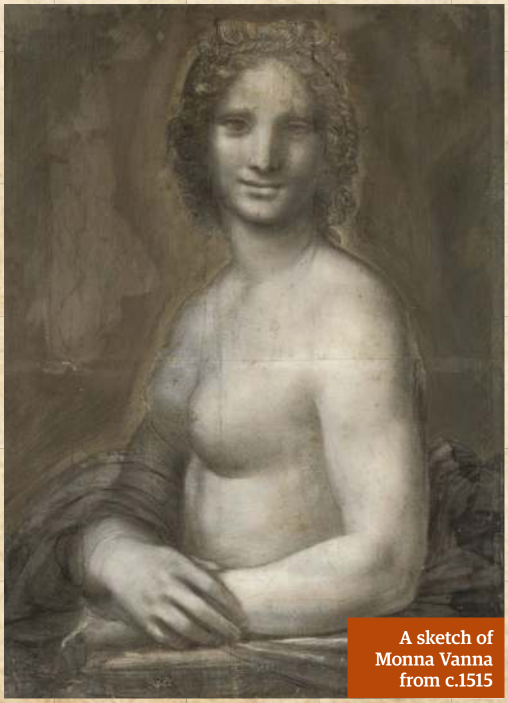
A lot of da Vinci's sketches focused on anatomy

A replica model of da Vinci's diving suit design

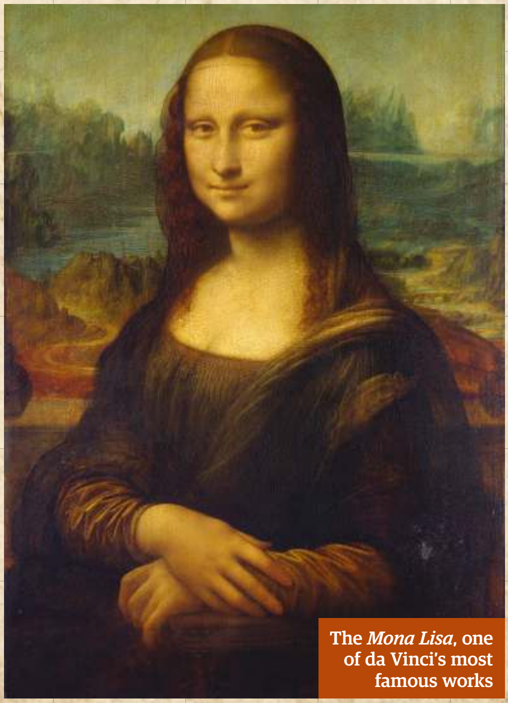


A model of da Vinci's innovative design for a parachute

A robot knight and its mechanism, based on da Vinci's drawings



A sketch of Monna Vanna from c.1515



The *Mona Lisa*, one of da Vinci's most famous works

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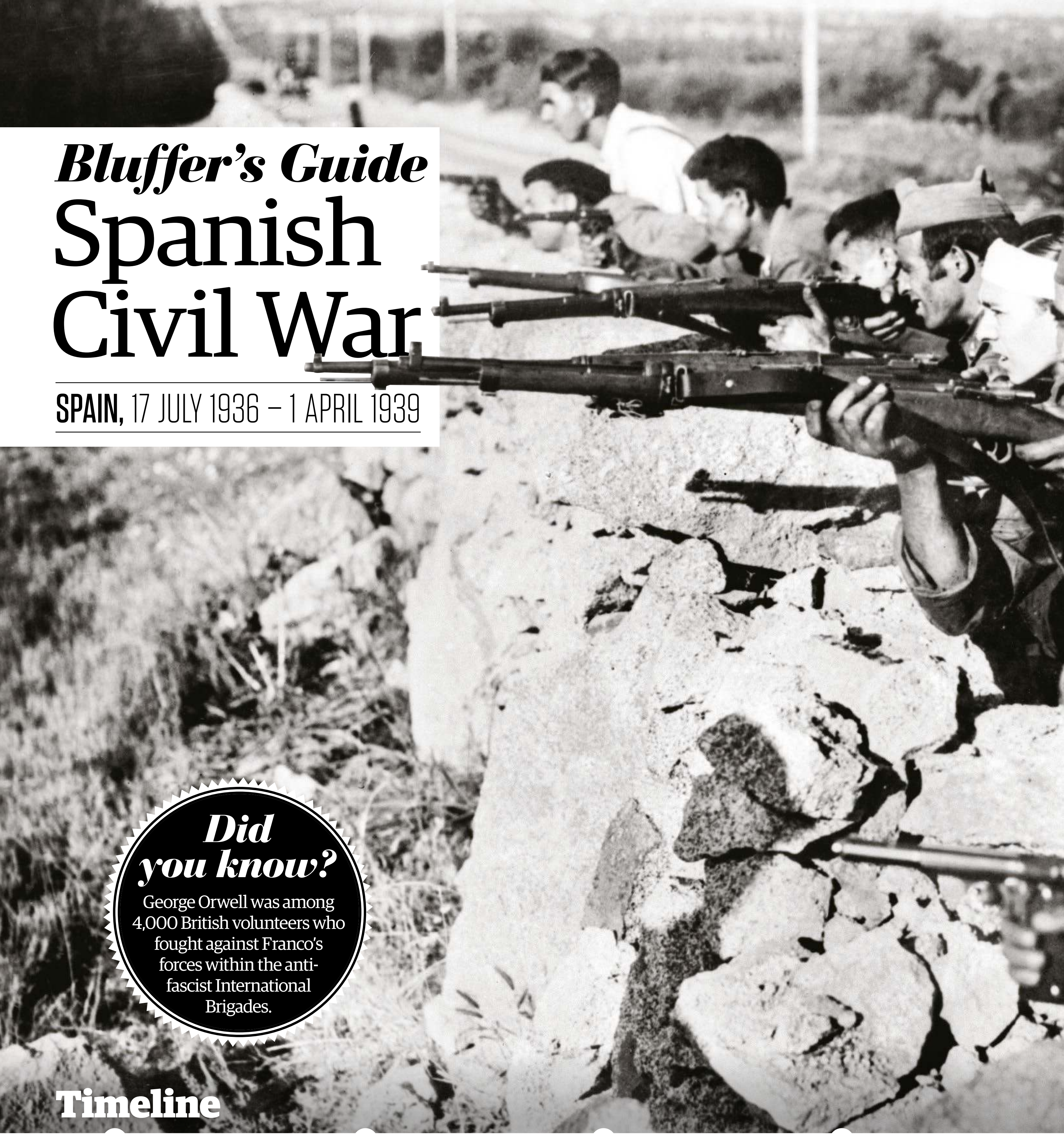


Bluffer's Guide
Spanish Civil War

SPAIN, 17 JULY 1936 – 1 APRIL 1939

Did you know?

George Orwell was among 4,000 British volunteers who fought against Franco's forces within the anti-fascist International Brigades.

Timeline

18 JULY 1936

The insurgent Nationalists take Seville within a day of the military coup being declared in Spanish Morocco, with 3,000 opponents reportedly executed within weeks.

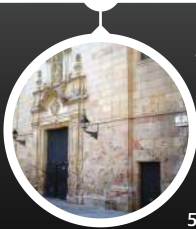
8 AUGUST 1936

France closes its Spanish border. Both it and the UK decide not to intervene – unlike Germany, Italy and Russia, who supply weapons and aid to either side.

26 APRIL 1937

Civilians in the Basque town of Guernica are bombed by German and Italian aircraft. Franco's propaganda unit attempts to deny Nationalist involvement.

3-7 MAY 1937



Trouble at a telephone exchange in Barcelona sees the various leftist factions split, leading them to fight each other. About 500 people are killed.

What was it?

On 17 July 1936, Spanish army troops led by General Francisco Franco revolted against Spain's popular left-wing Republican government just five months after it had been democratically elected. Their surprise attack was hugely effective, seizing a third of the country within a week. But after the right-wing Nationalist troops failed to gain total control, Spanish civilians joined militias in an attempt to put down the insurgency. Spain was split.

The Republicans were battling for freedom, backed by the Soviet Union. The Nationalists claimed a war against "godless" communists and they gained the support of Nazi Germany and fascist Italy. As many as 40,000 socialists, communists and idealists from around the world also joined the Republicans. The resulting civil war was bloody.

Madrid and Barcelona were key battlegrounds. Under siege against the Nationalists for most of the conflict, the latter fell in January 1939 and Madrid soon followed. By April, Franco had declared victory, executing 50,000 Republicans on top of the 200,000 people who had been killed in combat or other violent outbreaks during the war. Franco ruled Spain as a dictatorship until his death in 1975.

Why did it happen?

By the 1930s, Spain was deeply divided country with workers, farm labourers and socialists favouring left-wing Republicans, while monarchists, landowners, businessmen, the army and the Roman Catholic Church supported right-wing Nationalists. Partly due to the economic fallout of the Wall Street Crash, the military dictatorship that had ruled Spain since 1923 collapsed in 1929. In 1931, the king abdicated after the Republicans came to power.

A period followed where the two political rivals had served as elected governments but events worsened after General Franco crushed a miners' strike in Asturias in 1934, killing 1,000. Political groups formed militias and violence broke out on Spain's street. On 16 February 1936, the left-wing Popular Front coalition was elected. They banned the fascist Falange Party and began installing pro-Republican generals while demoting commanders with questionable loyalty. Matters came to a head and Franco made his move.

Who was involved?

Francisco Franco

4 December 1892 — 19 November 1975

As part of a group of generals who plotted the military coup, Franco led the Nationalist Army and removed anyone stood in his way.

Manuel Azaña

10 January 1880 — 3 November 1940

Azaña helped form the Popular Front and was president when civil war broke out. He stayed in office until the Nationalists' victory.

Adolf Hitler

20 April 1889 — 30 April 1945

Hitler declared his support for Franco on 26 July 1936. Seeking to cement relations with Italy and Spain, he sent aircraft and troops.

25 JULY – 16 NOVEMBER 1938

The lengthy and bloody Battle of the Ebro is the last major Republican offensive of the civil war. Tens of thousands die and the Nationalists emerge victorious.

28 MARCH 1939

The Nationalists had failed to take Madrid during intense fighting in November 1936 but finally succeed. The Republicans surrender unconditionally.

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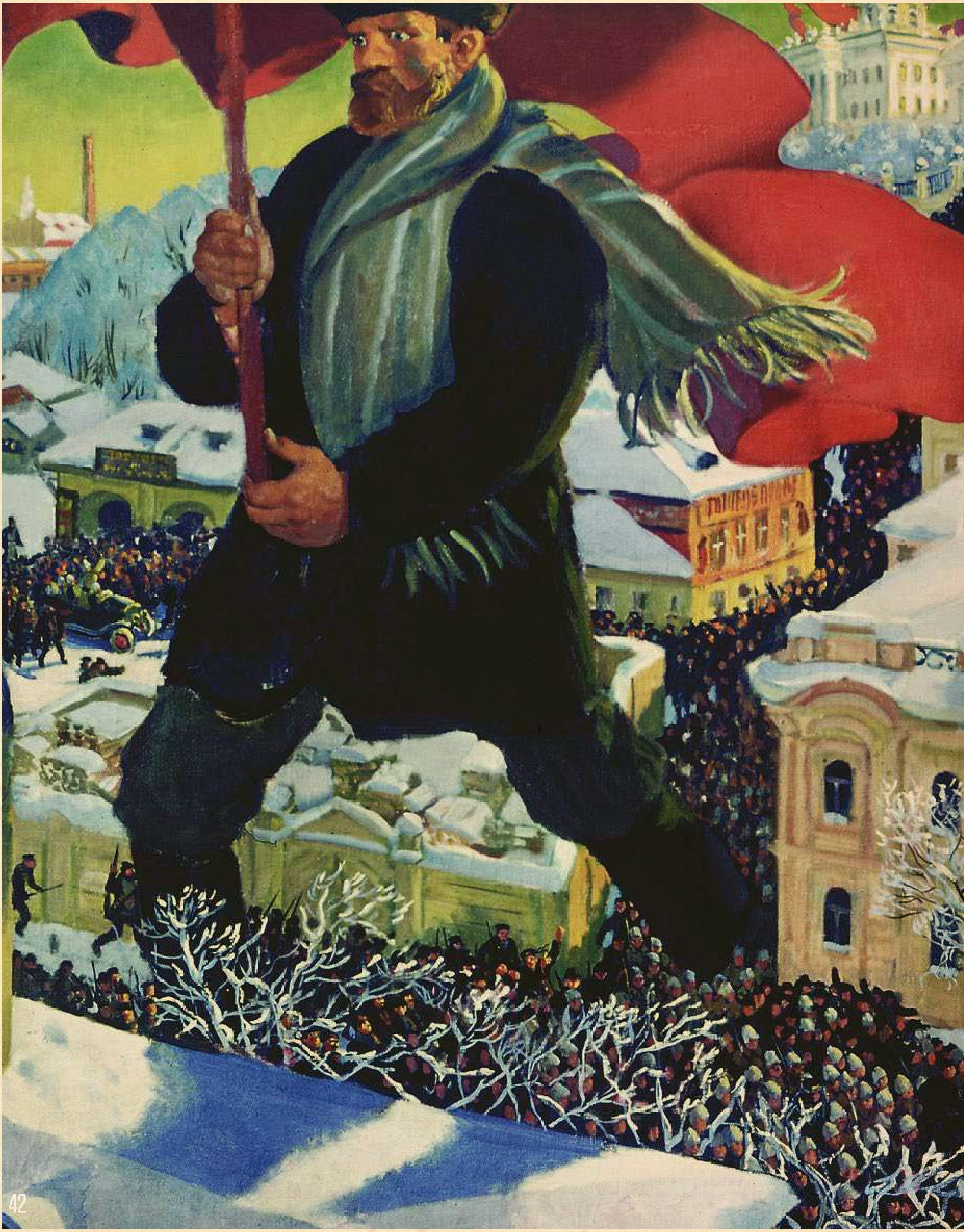


17 THINGS

YOU PROBABLY DIDN'T KNOW ABOUT THE

RUSSIAN REVOLUTION

The Russian Revolution changed the country forever – 100 years later, here are a few lesser known facts!

Russia had weathered the revolutionary storm in 1905

THE 1917 UPRISING WAS RUSSIA'S BIGGEST, BUT NOT ITS FIRST

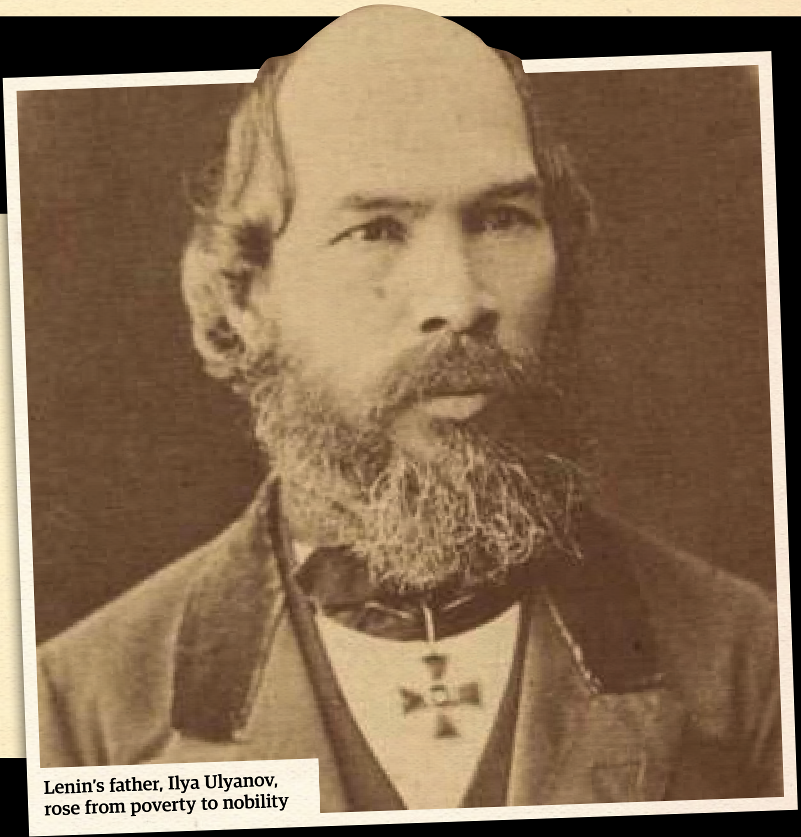
1

Although the consequences of the 1917 insurgency for the Romanov dynasty were catastrophic, it wasn't the first revolt that the monarchy had experienced. In fact, Tsar Nicholas II had already weathered the storm of revolution in 1905, an experience that had left him battered and weakened. Although he avoided a complete disaster in the earlier uprising, he was forced to agree to concessions that limited his powers, resulting in the launch of the October Manifesto, which agreed to a number of demands made by his subjects. These included measures to improve civil liberties, universal male suffrage and the introduction of an elected legislature known as the Duma. Above all, however, in 1905 the immensely powerful military remained predominantly loyal to the tsar's regime whereas, 12 years later, they were not. This was a crucial tipping point – when Nicholas lost the backing of the military, he also lost the throne.

LENIN WAS BORN TO NOBLE PARENTS

2

Though presented to the nation as the ultimate man of the people, Lenin's real origins were far grander than he liked to let on. He relied on the immensely powerful Bolshevik propaganda machine to create a background worthy of a revolutionary leader and give the impression that he was a working-class hero. In fact, Lenin's father had been born to a family of serfs but had clawed his way up to the top of middle classes, undertaking a university education and marrying the wealthy daughter of a doctor. He enjoyed a glittering civil service career and was eventually awarded the Order of St Vladimir, which turned the one-time serf into a hereditary nobleman. Lenin's parents were both conservative monarchists yet this fact, as well as his noble birth, were whitewashed from his carefully rewritten public biography, which told a tale of heroic lower-class struggle.


Lenin's father, Ilya Ulyanov, rose from poverty to nobility

Young Stalin was already a thorn in plenty of sides

STALIN'S EXILE WAS MORE LIKE A HOLIDAY

3

When Stalin was exiled to Selivanikha in Siberia in 1914 by the authorities, he spent his days hunting, fishing and communing with nature. He became popular in his new home and performed medical duties for the local community, as well as making friends among the local children, whom he liked to entertain. He was so popular that the community made a gift to Stalin of a dog, which he named Tishka. Yet Stalin still found time in his busy social schedule to father a child of his own. When World War I broke out and he was ruled unfit for duty, Stalin was moved to Achinsk. It was here in 1917, while staying with fellow Bolsheviks, that he learned that the February Revolution had taken place in Petrograd (Saint Petersburg). He left for Petrograd that same day.

Stalin's exile was spent beside the Yenisei River

STALIN MIGHT HAVE WORKED FOR THE TSAR'S SECRET POLICE

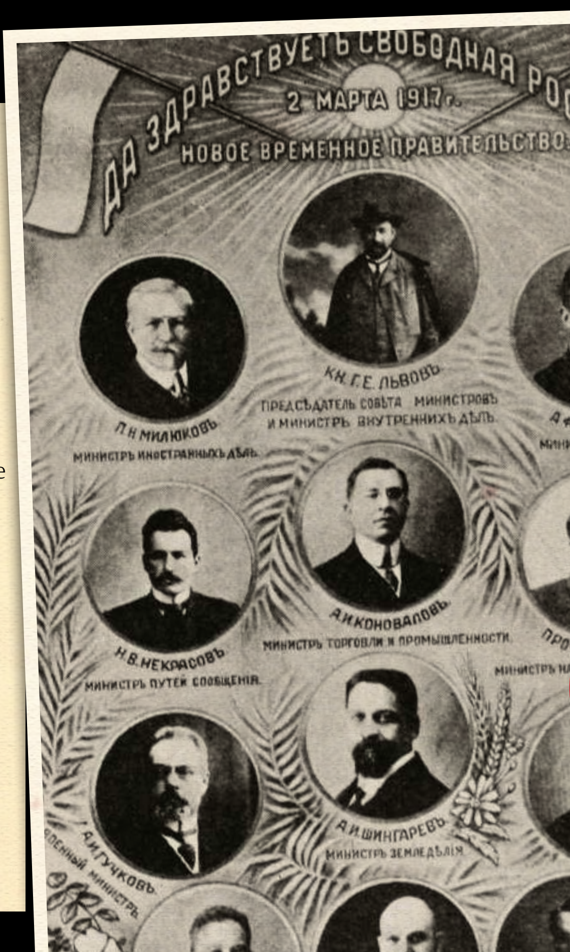
4

As early as 1916, accusations were being made that Stalin had once worked for the Okhrana, the secret police of the Russian Empire. The young Stalin, going by the alias Koba, seemed to be able to travel freely despite his known revolutionary leanings and wasn't subject to the same restrictions as his peers. Eyewitnesses claimed that Stalin regularly met Okhrana representatives and always knew who was about to be arrested, yet always escaped arrest himself. While this would suggest that Stalin was a traitor to his own cause, others have reflected that he was a realist who knew when to cosy up to the officers of the Okhrana. Stalin recognised that money, influence and power were all valuable, regardless of which side they came from.

STAFF TURNOVER WAS SHOCKINGLY HIGH

5

Tsar Nicholas II chose to personally lead Russian troops during World War I. When he went to the front in September 1915, he left Tsarina Alexandra in charge of domestic affairs – assisted by her personal advisor, the mystic monk Rasputin. The tsarina's rule was beset by scandal and fatally unstable. Thanks to jealous Alexandra's habit of dismissing anyone she considered disloyal, the Russian government had four prime ministers and ministers of agriculture, five ministers of the interior and three foreign ministers, war ministers and ministers of transport – all in just 18 months. This meant that nobody was in a position long enough to actually learn their job and the restless public were keen to find an alternative that might offer some sense of stability.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МИНИСТРЪ ЗЕМЛЕДѢЛІЯ
А.И. ГУЧКОВЪ
В.Н. ЛЬВОВЪ

During the tsarina's rule, the government was in constant upheaval

The Romanovs were famed for their extravagant wealth

THE ROMANOVS WERE WORTH A FORTUNE

6

When Nicholas II abdicated the throne in February 1917 in the face of growing unrest, the House of Romanov had ruled Russia for 303 years straight. They were one of the richest families in the world, worth some $45 billion at the time of Nicholas' abdication, which would be approximately $300 billion today. Intriguingly, more than $1 billion-worth of the imperial family's gold remains unaccounted for to this day, with the sum having disappeared while in transit to the Remington Arms Company to buy a shipment of weapons for the White Army. What became of that wealth has been the subject of questions and conspiracy theories ever since and to this day, pretenders to the House of Romanov occasionally come forward to make their claim to a portion of this fortune. So far, none have been successful.

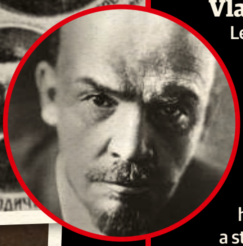
7

Faces of the Revolution

Whether monarch or Bolshevik, meet the major players of the Russian Revolution

Tsar Nicholas II

Nicholas II was the last emperor of Russia and also a devotee of cinema, which he popularised in his homeland. A reluctant tsar, when he first came to throne, Nicholas presided over the collapse of the once almighty Russian Empire. In the end, he paid the ultimate price for his failure.



Vladimir Lenin

Lenin whitewashed his past to up his working-class cred. He championed socialism but was less fond of music, which he flatly refused to listen to. This highly divisive figure championed the Red Terror, which mercilessly swept aside his opponents, but fell victim to a stroke in 1924.

Tsarina Alexandra

Alexandra Feodorovna was wife of Nicholas II and mother of his five children. This granddaughter of Queen Victoria adored the colour mauve and had her boudoir entirely decorated in a bespoke mauve silk that was imported from Paris. This room can still be seen today at the Alexander Palace.

Joseph Stalin

Uncle Joe rose from humble beginnings to rule the Soviet Union for just shy of 30 years, yet still found time to indulge his love of John Wayne's Westerns. Stalin used any means necessary to hold onto power and by the time of his death in 1953, millions had died under his regime.

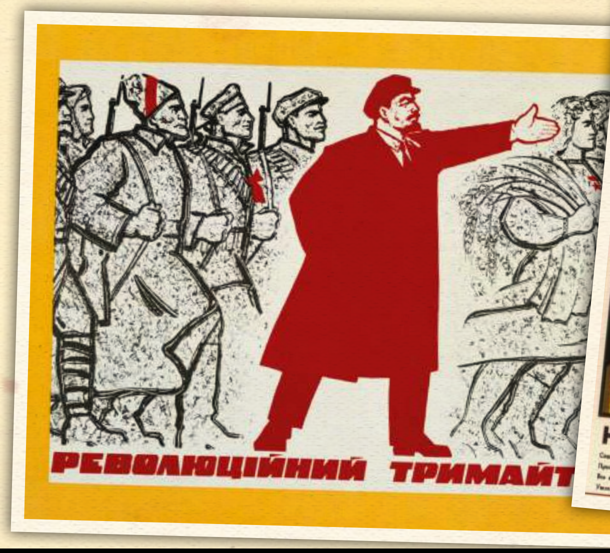
Leon Trotsky

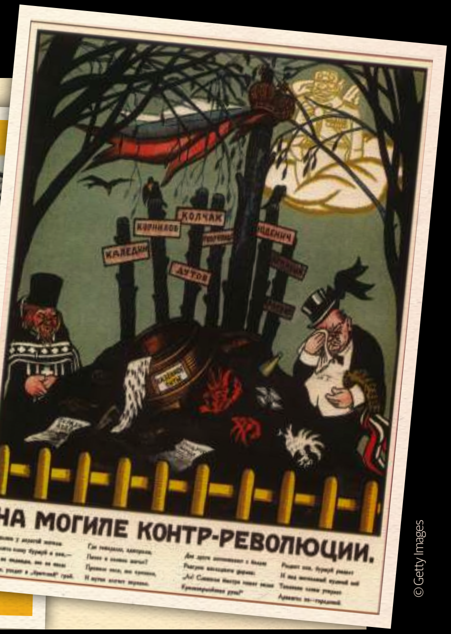
Trotsky considered himself to be a world-class chess player but that didn't help him when he tried to outwit Stalin. One a major figure in the Communist Party, he was exiled and written out of party history. Yet Trotsky was only silenced when an assassin buried an icepick in his skull.

THE REVOLUTION WAS A PROPAGANDA MASTERCLASS

8

The Bolsheviks knew the value of propaganda and used it to devastating effect. From popularising the image of the bourgeois as enemies of the working man to casting the leaders of the uprising as working-class heroes, propaganda played a vital role in the success of the Russian Revolution. Most important of all, Soviet propaganda always carried a clear and inarguable message straight from the top of the regime and required little if any decoding by the audience.





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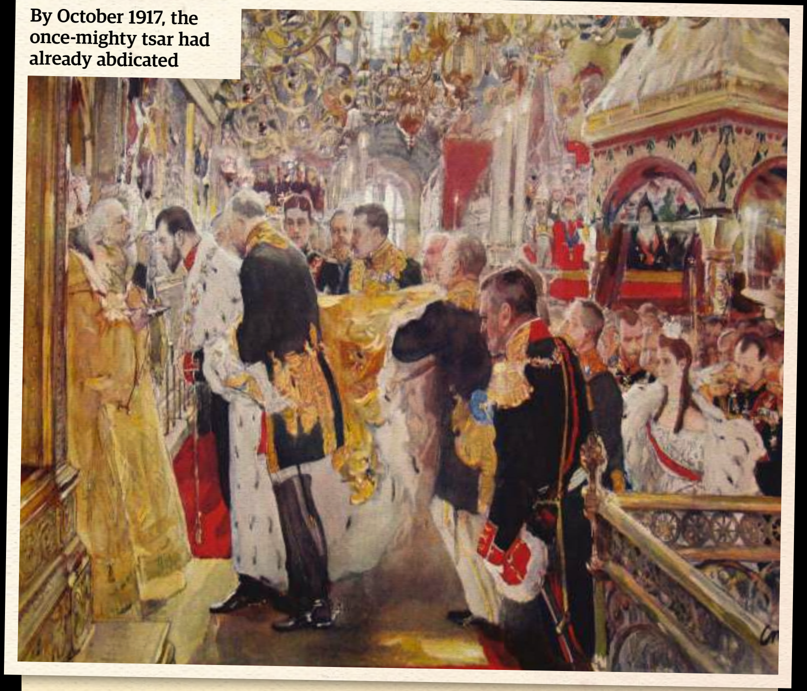
IN EUROPE AND RUSSIA, THE DATES DON'T MATCH

9

Although we know the key events of the Russian uprising as the February Revolution and October Revolution, the unrest actually began on 8 March and 7 November according to Western calendars. The mismatch in the dates is thanks to the fact that Russia was still using the Julian calendar, whereas the rest of Europe had moved over to the Gregorian one. This meant that the two calendars had a discrepancy of almost a fortnight. Russia, however, recorded the outbreak of the Petrograd rebellion as 23 February 1917 thanks to a discrepancy in the international calendar. This first episode of unrest came when striking, starving workers rioted against the monarchy. When the military was ordered to open fire on the protestors, they refused. The army, at last, had turned against the tsar.


By October 1917, the once-mighty tsar had already abdicated

The revolution began in Petrograd – but on what date?

THE REVOLUTION DIDN'T OVERTHROW THE TSAR

10

Although many people still believe that the October Revolution was the uprising that unseated the tsar from his throne, that isn't actually the case. In fact, Nicholas abdicated immediately after the February Revolution. He gave up the throne on 2 March 1917 and planned to go into exile abroad.

While he initially handed power to his son, Alexi, doctors advised that the little boy was not expected to live long and Nicholas duly chose his own brother, Grand Duke Michael, as his successor. But Michael refused the position, citing the lack of support from the people or the military. With that, the Romanov dynasty surrendered control of Russia.

The Duma formed a Provisional Government to hold the country together. This lasted six months but was hated for its continued commitment to World War I, driving public support for the Bolsheviks.

11

In numbers

10,500,000

Number of deaths during Russian Civil War (2.5 million military, 8 million civilian)

4 hours

Time it took to subdue the Winter Palace and arrest the government

30 minutes

Time it took to execute the Romanov family and their attendants

24%

Percentage of the votes won by Bolsheviks in the 1917 General Election

Number of people killed during Stalin's leadership

25 millon

7

Number of groups that made up the Russian Provisional Government

0.8 kilograms

of bread ration per person in 1917, versus 1.25 kilograms in 1916

THE CLOCK STOPPED AT THE WINTER PALACE

12

At 2.10am on 25 October 1917, the Bolsheviks marched into the small dining room at the Winter Palace and arrested the provisional government of Russia, seizing power once and for all. They had easily overwhelmed the paltry armed brigades who had stayed loyal to the government. It was here that Alexander Kerensky, who had led the provisional government since February, was deposed by Bolshevik forces, members of the cabinet were arrested and the Russian state made its first steps into the Communist era. At 2.10am, the moment at which these world-changing steps were taken, someone stopped the clock that stood on the mantelpiece of the dining room. Today it remains as it was 100 years ago, the hands stilled at the very second when the Russian government fell to the Bolshevik revolution.

A stopped clock in the Winter Palace marks the Revolution

NOT ONLY THE ROMANOVS WERE EXECUTED

14

There can be few people who don't know that the tsar, tsarina and their children were executed in the cellar of a house in Yekaterinburg on 17 July 1918. Their deaths, the fate of their remains and the occasional emergence of fraudsters posing as members of the family have entered into the annals of grisly royal history around the world. Yet it wasn't only members of the House of Romanov who died that night, for they were joined by loyal household staff and servants who had been herded into the cellar to die alongside them. These other victims of the Bolshevik soldiers were Doctor Yevgeny Botkin, cook Ivan Kharitonov, valet Alexei Trupp and Anna Demidova, the tsarina's maid. Anna tried to cover herself with a pillow stuffed with jewels. She survived over 30 bullet wounds, but was eventually bayoneted to death.

HMS Pegasus brought Royal Marines to serve in Murmansk

BRITISH FORCES FOUGHT THE BOLSHEVIKS

13

In order to ensure that war supplies intended for Russian use didn't fall into German or Bolshevik hands, the British War Cabinet sent Royal Marines sent to Murmansk on 6 March 1918 to reestablish the Eastern Front. It quickly became apparent that there was to be no cooperation from the Bolsheviks and the British decided that the best thing for the war effort would be to depose the Bolshevik government as quickly as possible. The Royal Marines offered their support to the anti-Bolshevik forces but this mainly took the form of an increased number of weapons and ammunition, as opposed to supplying additional soldiers to fight alongside them. In fact, while War Minister Winston Churchill was virulently in favour of sending additional troops to depose the Bolshevik government, Prime Minister David Lloyd George advocated a less interventionist approach. British forces left Russia in October 1919.

Anna Demidova died a gruesome death alongside the royal family

Lenin pulls his weight at the 1920 Subbotnik

NOT ALL OF THE ROMANOVS WERE KILLED

15

It's a common misconception that the entire Romanov family was executed in Yekaterinburg but that isn't the case. At the time the family were executed, there were 65 members of the Romanov dynasty still living – 18 died during the Revolution but the remaining all found sanctuary overseas. Some of those left Russia in 1919 aboard HMS Marlborough, which King George V of the United Kingdom had sent under pressure from his mother, Queen Alexandra. Her sister, Maria Fyodorovna, was the mother of the murdered tsar. Dowager Empress Maria was one of those who boarded HMS Marlborough to safety, yet she refused to do so until the ship had been filled with injured soldiers and any civilian who wanted to flee the approaching Bolsheviks. For her eldest son, daughter-in-law and grandchildren, the British intervention was too little, too late.

HMS Marlborough carried the surviving Romanovs to safety

TRADITIONAL STREET SWEEPING STILL MARKS THE RUSSIAN REVOLUTION

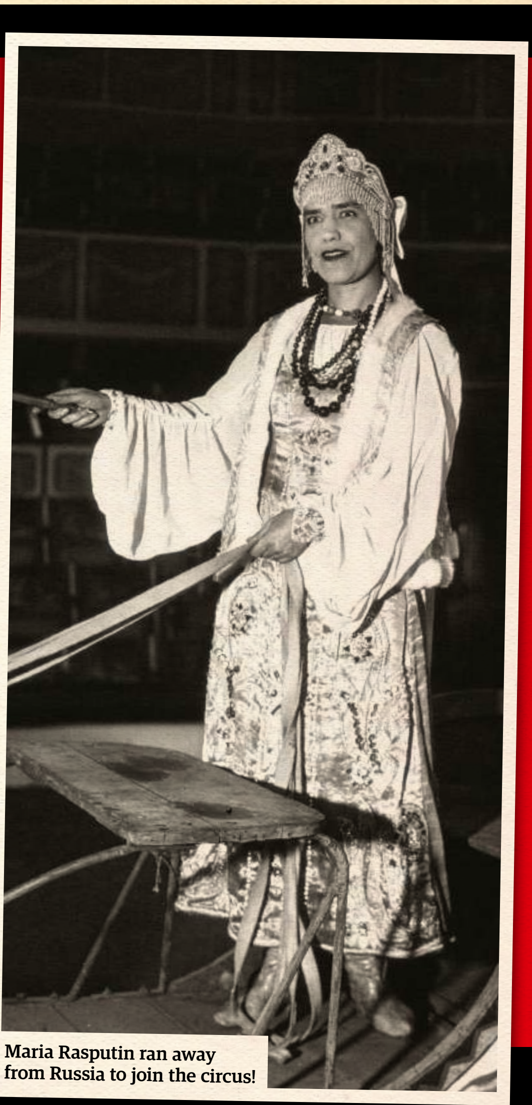
16

In the months following the October Revolution, citizens were invited to take part in the voluntary workdays known as Subbotniks. These days, which took place every weekend, were opportunities for people to clean up the streets and clear rubble left after the uprisings. Although they were supposedly optional, all were expected to pull their weight and Subbotniks became a regular fixture in every Russian calendar. The first Subbotnik was on 12 April 1919 and the Bolsheviks soon used the occasion as a propaganda tool, issuing pictures showing revolutionary leaders cleaning up the cities for the people. In fact, Lenin viewed the Subbotnik as the first real chapter in the origin of communist Russia. The tradition continues to this day but now the Subbotniks are usually given a civic purpose, such as cleaning up a specific area, collecting and processing recyclables or carrying out other voluntary work of public value.

RASPUTIN'S LION-TAMING DAUGHTER FLED RUSSIA

17

Maria Rasputin was just 18 when the tsarina gave her a gift of jewels that she hoped would pay for the girl to escape Russia. However, Rasputin had unfortunately already arranged for Maria to marry Boris Soloviev, who saw himself as the Mad Monk's mystical successor, and he took the jewels for his own before their wedding, keeping the money. Following the arrest of the Russian Provisional Government, Maria and Boris went on the run, sheltering with family at locations across Russia. Although Boris was arrested and Maria questioned about those disputed jewels, the couple and their daughter left Russia once and for all in 1920. They lived a nomadic life across Europe, capitalising on Maria's notorious surname. After Boris died, Maria eventually joined a circus in Indiana, in the United States. She worked as a lion tamer, survived an attack by a bear and eventually died in Los Angeles in 1977 at the age of 79.



Maria Rasputin ran away from Russia to join the circus!

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THE REAL MACBETH

THE TRUE STORY OF THE RED KING'S BLOODY RISE

Was the Medieval monarch really the treacherous tyrant Shakespeare portrayed him as?

Written by Peter Price

***Macbeth* is one of William Shakespeare's most famous works, having kept audiences spellbound with its tales of murder, betrayal and a sprinkling of the supernatural for centuries.** It tells of an ambitious noble whose lust for power sees him kill his friend and king to gain the throne, spurred on by a prophecy from a trio of witches and his ruthless wife. Macbeth's treachery sees his enemies come back for revenge and he dies alone and friendless at the end.

We do not know a lot about the real Macbeth, who lived from 1005-1057. But what records we have suggest his rise to the throne, while quite different to Shakespeare's tragedy, was no less bloody. We find a man whose ambition drove him to become ruler of the kingdom of Moray and then the whole of Scotland – a feat achieved over the slain bodies of his enemies. The Bard didn't have to look hard to find drama and intrigue, but he did not tell the whole story. Macbeth was not as underhanded as his literary counterpart. He also ruled a strong and stable Scotland for almost a decade, putting it on the European map as a place of international renown.

Scotland in the 11th century was much different to the one we know today, made up of a patchwork of loosely connected kingdoms. Alba was the largest and most central state. The seafaring Jarldom of Orkney, ruled by the Lord of the Isles, encompassed the Outer Hebrides and the northern tip of the mainland. Strathclyde made up the area running from Glasgow to Penrith. Moray, where Macbeth's family ruled, included Inverness and Aberdeenshire.

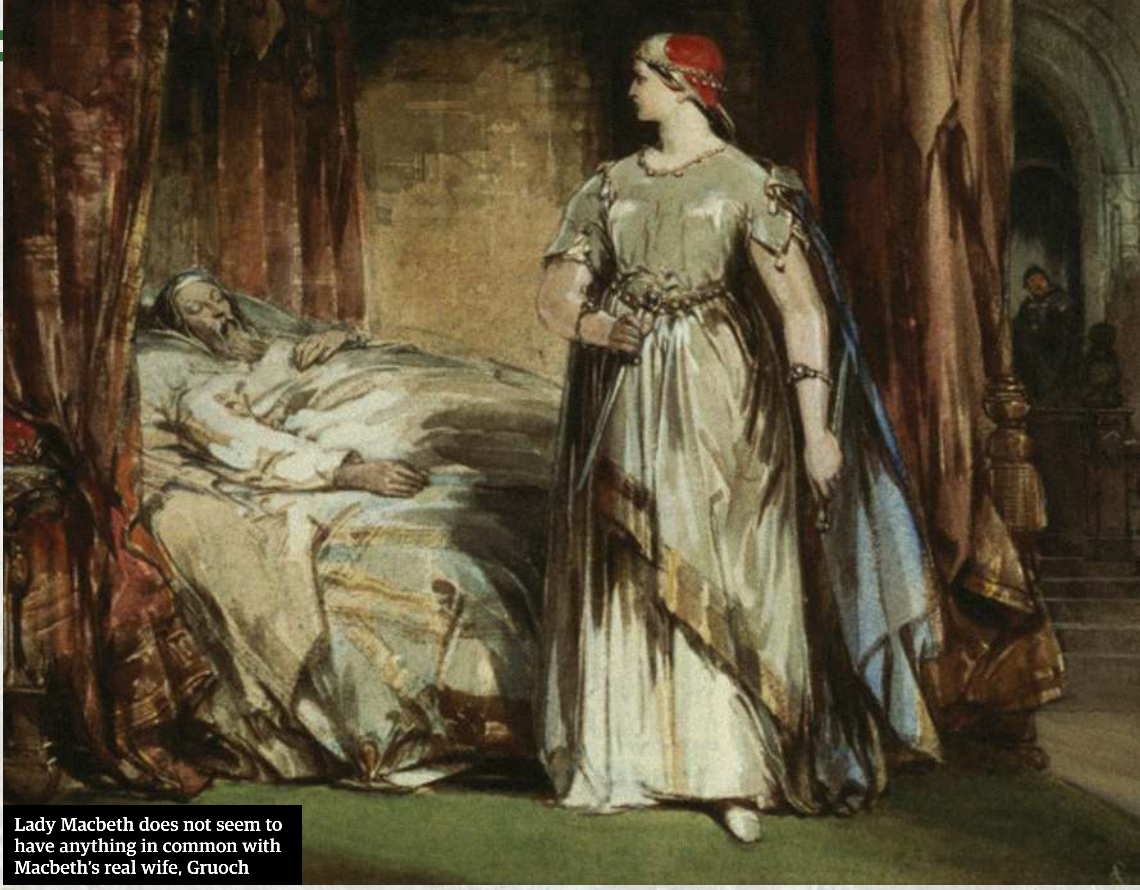
> "THE BARD DIDN'T HAVE TO LOOK HARD TO FIND DRAMA AND INTRIGUE"

It is impossible to ascertain exactly how these kingdoms interacted with each other, but many historians think that each was ruled autonomously by a ruler that was subservient to an overarching king of Scotland. This system would have been similar to the Irish high kings of the same period. Ruling from his seat in Alba, Malcolm II was the high king of Scotland when Macbeth was born.

Generations of war and dynastic conflict had seen Scotland's crown pass from brother to brother rather than the more familiar primogeniture, which hands the crown down from father to son. With many Scottish kings in the 10th and 11th centuries being killed by their rivals, this system ensured that someone was always ready to rule without the number of claimants to the throne growing ever larger.

However, Malcolm was a powerful figure in the region. Killing his predecessor, Kenneth III in 1005, and allegedly securing his territory by defeating a Northumbrian army at the Battle of Carham (around 1016), he not only confirmed the Scottish hold over the land between the rivers Forth and Tweed but also secured Strathclyde about the same time.

As savvy a politician as he was a general, Malcolm saw the Norman feudal system down south and decided to defy tradition – he would pass the crown directly to his heir. He set about removing all the rival claimants to the throne in a very direct way – by killing them. It's highly probable Macbeth was Malcolm's younger cousin, so he was lucky to survive this cull. Malcolm is Medieval Scotland's only real example of a serial killer. His consolidation of power was arguably far worse than anything the real Macbeth ever did.



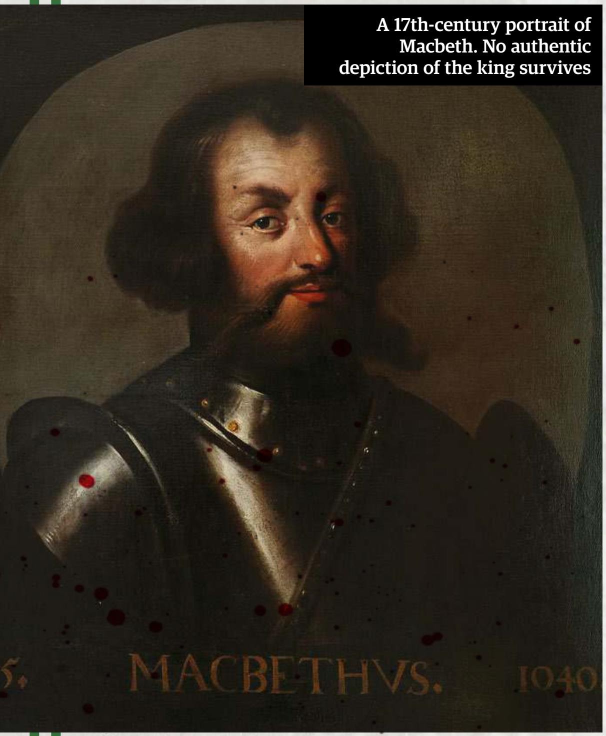
Lady Macbeth does not seem to have anything in common with Macbeth's real wife, Gruoch

A major flaw in Malcolm's plan, though, was that there is no evidence of him actually fathering a son, only daughters. Instead, his grandson Duncan would inherit his crown, becoming Duncan I. This is the supposedly good king Macbeth betrays in Shakespeare's play.

The kingdom of Moray was ruled by a mormaer, meaning high steward, and was the position held by Macbeth's father Findlaech, or Findley. This means Macbeth's name was quite unusual. 'Mac' usually means 'son of' – like 'Macduff' would mean 'son of Duff' – but as Macbeth's father was called Findley his name meant 'son of life'. In later life, Macbeth would be known by another name, 'The furious Red One', presumably given for his prowess on the blood-splattered battlefield.

Despite Malcolm II being the high king, Findley clearly didn't respect him as he sent a constant stream of raiding parties into his territory. This outward show of aggression was tempered by an internal feud when Findley was usurped and murdered by his nephew Gille Coemgáin. The new ruler of Moray would then go on to marry a Scottish princess, Gruoch – from the line of Kenneth III, who Malcolm had killed to assume power. As well as inheriting Moray, their son Lulach could make a claim for the high kingship.

While this might have placed the boy in Malcolm's crosshair, Macbeth got in the way. Findley's son wanted to retake Moray. In 1032, Gille Coemgáin and 50 or so of his followers were locked in a hall that was set alight, roasting all those inside. While there is some ambiguity as to who ordered the killing, Macbeth stood as the one to benefit most. The fire saw Macbeth's opposition die gruesomely and he now stood as uncontested ruler in Moray. Shrewdly, Macbeth also married Gillecomgáin's widow and took her son as his ward. This is one of the few examples of Macbeth displaying the sort of underhandedness that Shakespeare would make him synonymous with.



A 17th-century portrait of Macbeth. No authentic depiction of the king survives

No sooner was Macbeth king of Moray, he had to look to his northern borders to combat the growing power of Earl Thorfinn the Mighty. The Norse *Orkneyinga Saga* names Karl Hundason as the king of Scots and relates Thorfinn's struggles with him to assert his control over the northernmost points of Scotland, namely Caithness and Sutherland. Hundason has been suggested to be Macbeth, although the reason for the ambiguity is unknown. If true, Macbeth failed to take away Thorfinn's positions on the mainland, but as the Norse jarl got his nickname from his massive frame and skill in battle, he may have been out of his league.

"MANY OF THE KINGS BEFORE HIM HAD TAKEN THE THRONE BY BRUTE FORCE"

When Duncan took the crown in 1034, Macbeth may have seen a chance to extend his sphere of influence and gain the throne of all of Scotland. Duncan was seen as an ineffectual ruler, being described as "a man promoted well beyond his station" – a far cry from the fearsome Malcolm II. Our understanding of Duncan's reign as peaceful comes largely from the play, but it seems that Shakespeare cherry-picked the good aspects and left out the drudgery to better place the king as a counterpoint to Macbeth's tyranny and ambition.

Duncan I met his end at Macbeth's hand, but the deed was not done in the dead of night in a bedchamber. The two met on the battlefield in 1040, near Elgin, and Duncan was slain. Whether it was Macbeth who did the deed is unknown, but some poetic licence can see this confrontation being a dramatic showdown.

The British Isles have a history of royal usurpers and Macbeth certainly fits the category. Many of the kings before him had taken the throne by brute force. In fact, violent succession was so commonplace in Scotland at the time that Duncan I's peaceful coronation was somewhat of an oddity.

Aside from having killed Duncan, Macbeth could also claim lineage to the Scottish throne through his mother's bloodline and, of course, his stepson Lulach. His claim was strong enough that he was crowned with no opposition. After his death, Duncan's son – another Malcolm – would flee the country.

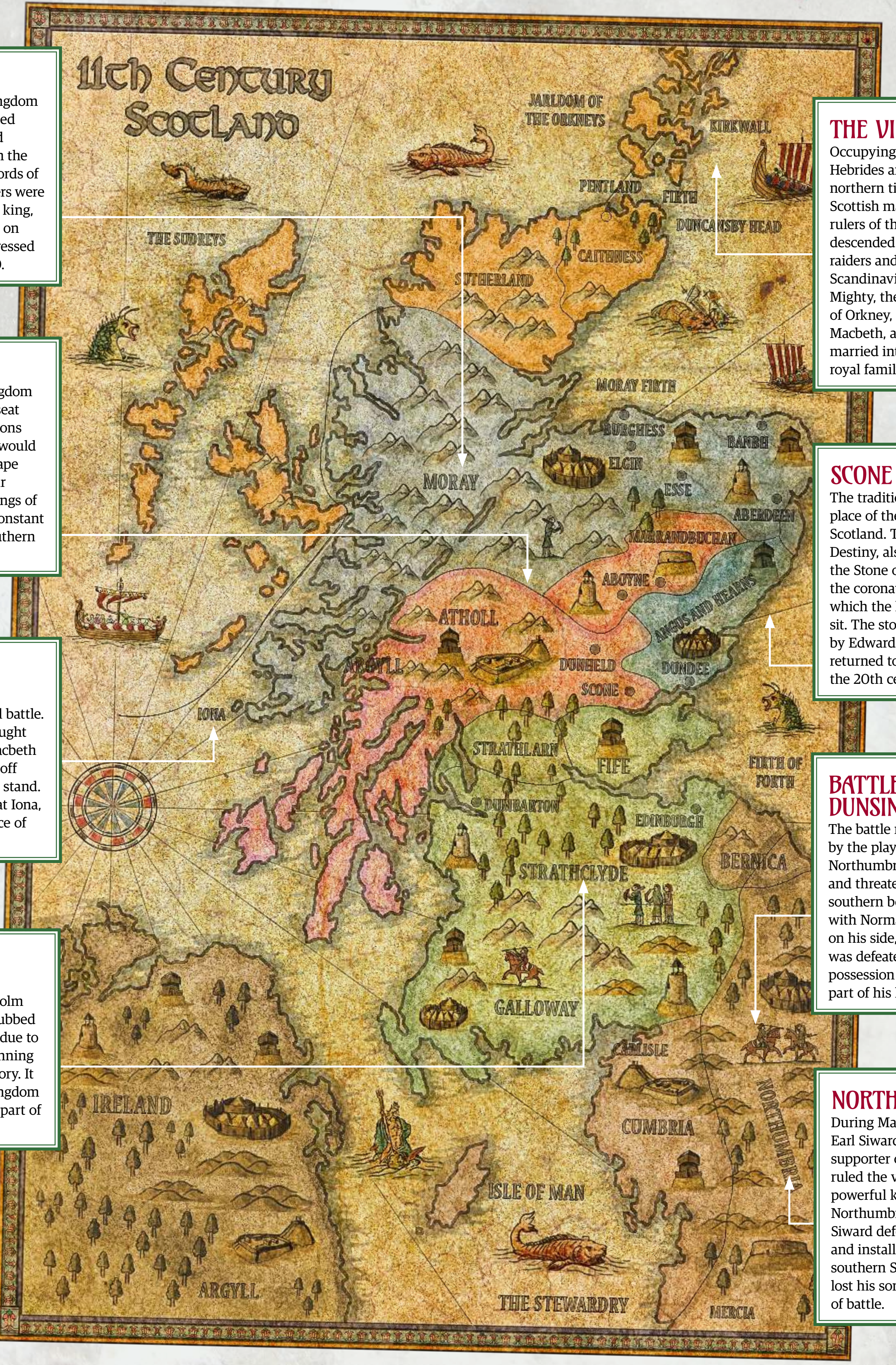
Once king, Macbeth faced very little opposition for much of his reign. However, having clashed with the Jarl of Orkney as the ruler of Moray, his kingship was contested in 1045 by Duncan I's father, Crinán, abbot of Dunkeld. This powerful man could have been a real thorn in Macbeth's side, but after a brief and violent struggle Crinán and 180 of his men lay dead. This was not an age of pitched battles in Scotland and many of the conflicts fought by Macbeth would have been on a much smaller scale to, say, the Battle of Hastings, which was fought in 1066 – about a decade after his death.

Crinán's rebellion was Malcolm II's bloodline trying to reassert itself and place the future Malcolm III on the throne. Just as in the play, Macbeth had won the crown by bloodshed and the dead were coming back to haunt him.

However, after seeing this rebellion off, Macbeth did something no other king of Scotland had ever done: he went on a pilgrimage to Rome. This journey could have taken months, so this meant he must have been confident enough in the strength and stability of his reign that he did not fear usurpation. Macbeth was invited to a papal jubilee hosted by Pope Leo IX.

THE FOUR KINGDOMS

During the 11th century Scotland was not a single entity – rather a collection of independent kingdoms


11th Century Scotland
JARLDOM OF THE ORKNEYS
KIRKWALL
PENTLAND FIRTH
DUNCANSBY HEAD
THE SUDREYS
CAITHNESS
SUTHERLAND
MORAY FIRTH
BURGHESS
BANBH
ELGIN
ESSE
MORAY
ABERDEEN
MARRANDBUCHAN
ABOYNE
ANGUS AND HEARNS
ATHOLL
ARGYLL
DUNKELD
SCONE
DUNDEE
IONA
STRATHEARN
FIFE
FIRTH OF FORTH
DUNBARTON
EDINBURGH
BERNICIA
STRATHCLYDE
GALLOWAY
CARLISLE
IRELAND
CUMBRIA
NORTHUMBRIA
ISLE OF MAN
ARGYLL
THE STEWARDRY
MERCIA

MORAY

A fiercely independent kingdom within Scotland, it inhabited most of the Highlands and served as a buffer between the king of Scotland and the lords of the Isles. Although its rulers were usually subservient to the king, many Moray rulers fought on until the region was suppressed for good by David I in 1130.

ALBA

Another name for the kingdom of Scotland, this was the seat of the king. Ongoing tensions between Alba and Moray would shape the political landscape of the territories until their unification in 1130. The kings of Alba were also in a near-constant state of war with their southern neighbours in England.

BATTLE OF LUNFANNON

The site of Macbeth's final battle. Retreating from the onslaught of Malcolm III's forces, Macbeth and his men were caught off guard and made their last stand. His body was laid to rest at Iona, the traditional resting place of the kings of Scotland.

STRATHCLYDE

Brought into the king of Scotland's sphere by Malcolm II, Strathclyde has been dubbed 'the kingdom of the M74' due to the modern motorway running through the historic territory. It was also known as the kingdom of Cumbria and was fully part of Scotland by 1066.

THE VIKINGS

Occupying the Outer Hebrides and the northern tip of the Scottish mainland, the rulers of this region were descended from Viking raiders and had ties to Scandinavia. Thorfinn the Mighty, the powerful Jarl of Orkney, fought with Macbeth, and his widow married into the Gaelic royal family.

SCONE

The traditional coronation place of the kings of Scotland. The Stone of Destiny, also known as the Stone of Scone, is the coronation stone on which the king would sit. The stone was taken by Edward I and only returned to Scotland in the 20th century.

BATTLE OF DUNSINANE HILL

The battle made famous by the play saw Siward of Northumbria march north and threaten Macbeth's southern borders. Even with Norman mercenaries on his side, Macbeth was defeated and lost possession of the southern part of his kingdom.

NORTHUMBRIA

During Macbeth's reign, Earl Siward, a powerful supporter of King Cnut, ruled the vast and powerful kingdom of Northumbria. Although Siward defeated Macbeth and installed his ally in southern Scotland, he lost his son on the field of battle.

KEY

- 🟩 Strathcylde
- 🟦 Moray
- 🟥 Alba
- 🟧 Jarldom of Orkney

THE SCOTTISH PLAY

What other parts of Macbeth's history did Shakespeare rewrite?

THE GHOST OF BANQUO

In the play, Banquo is a friend Macbeth murders, only to be haunted by his ghost. Banquo was a mythical figure that the Stuarts – including King James I & VI – claimed descent from. Courting favour with the monarch, the Bard even has the witches predict Jame's coming in the play, telling Banquo, "Thou shalt get kings, though thou be none." In reality, it's likely the Stuarts originated from a Breton family who came to Scotland after the Battle of Hastings and after Macbeth's reign.

LADY MACBETH

Shakespeare's leading lady is one of the most powerful women in literature, a queen with vaulting ambition and hardened ruthlessness. Sadly, we know little about Macbeth's real wife, Gruoch, or her part – if any – in her husband's rise to power. However, *Holinshed's Chronicles* may have inspired the playwright. An Englishman, Holinshed describes Scottish women as being as bloodthirsty as the men in battle: 'They slew the first living creature that they found, in whose bloud they not onely bathed their swordes, but also tasted therof with their mouthes'.

WEIRD SISTERS

The witches who "double, double, toil and trouble" are one of the most iconic features of Shakespeare's *Macbeth*. While it's likely people in 11th-century Scotland would have believed in witches, their inclusion speaks more to the issues of Shakespeare's day. A Witchcraft Act, making it legal to kill witches, was passed by Elizabeth I in 1563. Her successor, James I & IV, was obsessed with witchcraft, writing a three-book treatise called *Daemonologie* in 1597. In *Macbeth*, Shakespeare's First Witch curses a ship called the Tiger to suffer 81 weeks of storm. A real ship of that name reached Milford Haven after a traumatic voyage of just that duration in June 1606 while Shakespeare was writing the play. But the reference would have also reminded Shakespeare's audience of the well-publicised North Berwick Witch Trials of 1590-92. Over 70 Scottish women were tried, with some confessing after torture to trying to sink James' ship by conjuring a tempest when he sailed to Copenhagen in 1589.

"TEN THOUSAND DOLLARS"

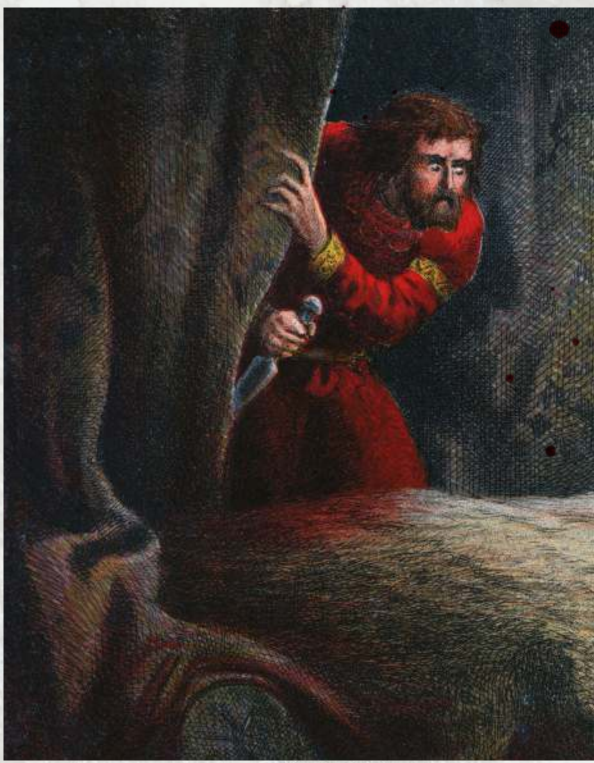
The minor character of Ross tells Duncan how Macbeth demanded a ransom from the king of Norway to be paid in dollars. Rather than presciently referring to the US currency, Shakespeare was using an Anglicised name for the German Thaler. This currency was widely used in Scotland during the Bard's time, but the Thaler was not minted until the 15th century – 400 years after Macbeth had died.

THE EQUIVOCATOR

Macbeth's doorman, the Porter, refers to 'equivocation' – the act of avoiding the sin of lying by implying something untrue through ambiguous phrasing. While this might sound rather like esoteric moral wrangling to a modern ear, the phrase was highly political in Shakespeare's time. Henry Garnet, a Jesuit priest, was hung, drawn and quartered for being 'complicit' in the Gunpowder Plot of 1605. Garnet had heard about the plot to blow up the Houses of Parliament, but not reported it to the authorities as it would have broken the seal of confession. Garnet's writings on the topic of equivocation were publically criticised and used against him during his trial.

THANE OF GLAMIS

At the start of the play, Macbeth is described as Thane of Glamis and is made Thane of Cawdor by Duncan for his efforts fighting Norway. A 'thane' was a Scottish noble who ruled a portion of the country in the kings name. The actual Macbeth was significantly higher born – he was the Moramaer of Moray before conquering all of Scotland. Shakespeare's confusion seems to have stemmed from his research material, a potted history known as *Holinshed's Chronicles* published in 1577.



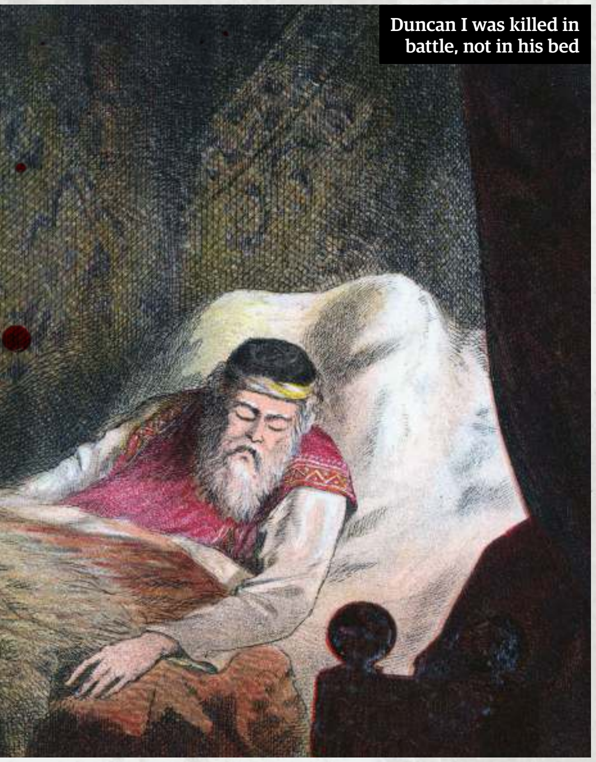
While in Rome, Macbeth "scattered money like seed to the poor", implying he possessed great wealth. Scotland was flourishing, or at least not in financial trouble under his kingship. Macbeth's visit to Rome also indicates a knowledge of the wider world and that Scotland was firmly on the European map during his kingship.

In a further sign that Scotland was open to international business, Macbeth's reign also saw the first mention of Normans in Scotland when he took two into his service in 1052. Having left Edward the Confessor, two knights, Osbern and Hugh, joined Macbeth's military council. Unfortunatetly, their impact in campaigns in opposition to the Normans' reputation for military prowess was negligible and they were killed at Dunsinane. This was the beginning of trouble on Macbeth's southern borders.

The battle, as in the play, saw a massive, well-equipped army march north from England led by Siward, the powerful Earl of Northumbria. While Birnam Wood did not uproot itself, as Shakespeare artfully put it, some 3,000 Scots and 1,500 English lay dead at the end of the day – a massive butcher's bill for the era.

Although he survived the fight, Macbeth's kingdom had a chunk taken out of it as Siward crowned Duncan's exiled heir as king of Strathclyde. The death of Siward a year later must have filled Macbeth with hope, but this would be short lived.

Malcolm Canmore, the future Malcolm III, was seeking revenge for his father's death and had his eyes set on the crown. He marched into Scotland in 1057 and surprised Macbeth and his men at Lumphanan in Aberdeenshire. He may have come from Orkney as he was married to Thorfinn the



Duncan I was killed in battle, not in his bed

Mighty's widow, whose past conflicts with Moray would see no love lost between the two. Macbeth's enemies were uniting against him.

With his forces Malcolm cornered Macbeth at Lumphanan and after a fierce fight saw the former fall on the battlefield. It seems fitting that Macbeth's death came by the sword of Duncan I's son, the very man he killed to take the crown. Perhaps this overwhelming sense of poetic justice is what convinced Shakespeare to choose just this king to write his play about.

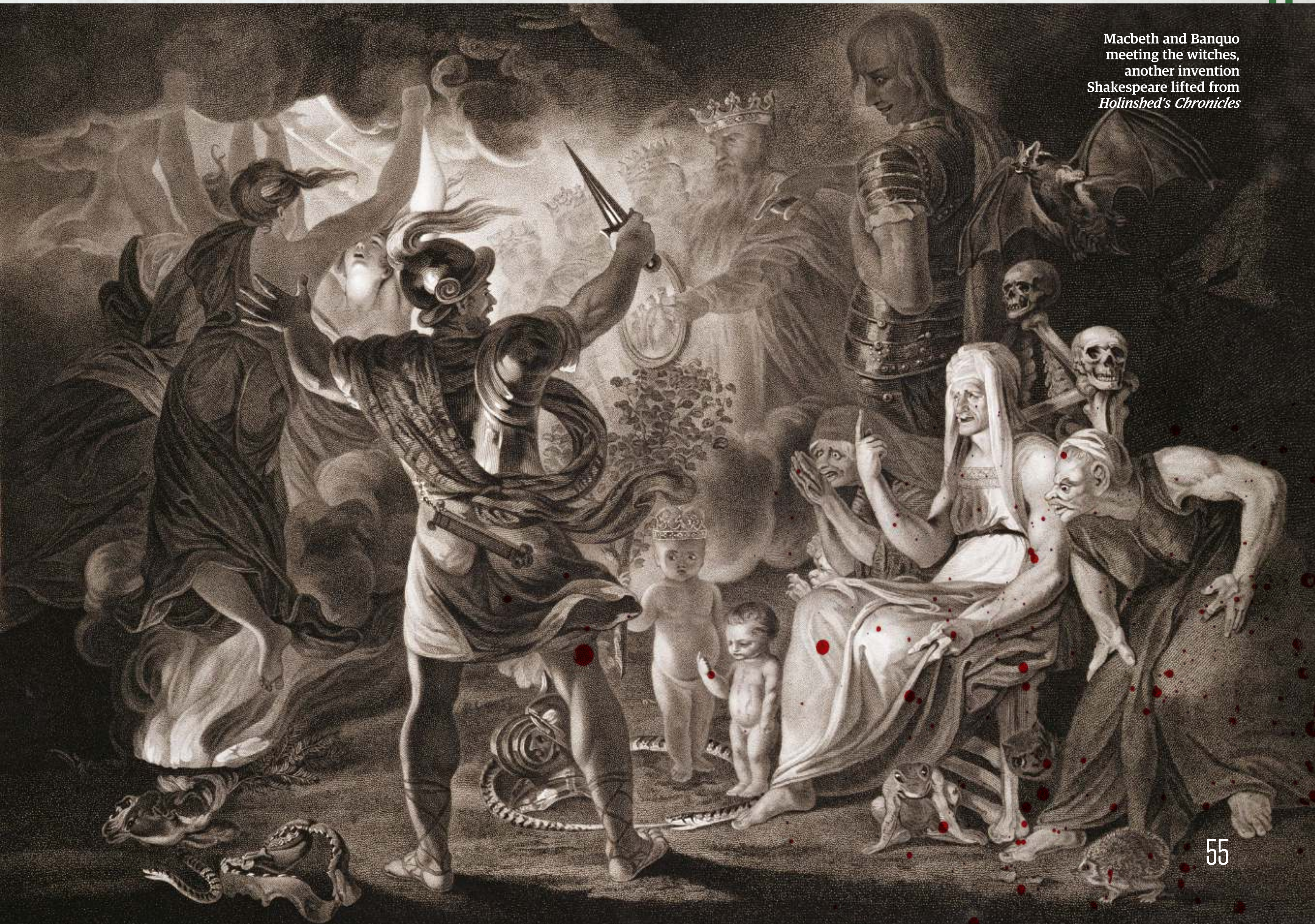
But Malcolm didn't take the throne straight away. Lulach, Macbeth's stepson with the noble heritage, was taken to Scone by loyal followers and crowned king after his stepfather. However, the reign of Lulach – known as 'the Unlucky' or by less generous chroniclers, 'the Idiot' – was destined to be short-lived, as just four months later Malcolm would slay him at Essie in 1058 and take the throne as Malcolm III.

However, Medieval Scottish history is murky. An alternative tale sees Lulach and Malcolm combine their forces to take vengeance on Macbeth, the man who had killed both their fathers. After his death, Malcolm may have then rounded on his ally and taken the throne for himself. Whatever the actions, Malcolm III emerged victorious and ended Macbeth's line for good.

“WITH HIS FORCES, MALCOLM CORNERED MACBETH AT LUMPHANAN”

Macbeth's actions were not unusual for a Scottish king in this era of blood and strife, but his story is certainly made all the more famous as a result of Shakespeare's dramatic attentions. While not the tyrant portrayed in the play, Macbeth claimed the throne through ruthless force, carving out a reign in a bloody and turbulent time in Scottish history.

We get a feel that Macbeth was a capable ruler and a man of ambition, taking revenge against his father's killers to rule Moray by exploiting the political stage and using his military might to take the Scottish throne. While he was able to rule with impunity for a number of years, the feuds created by his actions came back to haunt him and he died at the hands of men hellbent on revenge.



Macbeth and Banquo meeting the witches, another invention Shakespeare lifted from *Holinshed's Chronicles*

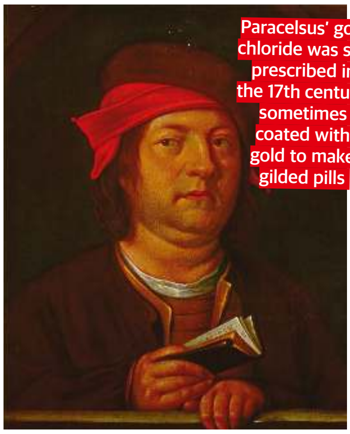
Through History

QUACK MEDICINE

For as long as there has been medicine, there has been quack medicine – cure-alls predicated on cluelessness and more sinister snake oil scams

GOLD 2500 BCE

As far back as 2500 BCE the Chinese knew gold was resistant to corrosion, and they associated it with prolonged life. But with the rise of alchemy in Medieval times, the quest to create a drinkable form of gold kicked into high gear. Around 1300 CE an alchemist named Geber figured out how to make gold dissolve in a liquid, producing a salt - gold chloride - that could be mixed with water. 16th-century alchemist Paracelus later claimed drinkable gold helped with mania, epilepsy and St Vitus Dance disease. Yet it was toxic. The gold chloride salts could cause kidney damage and auric fever. This made the sufferer feverish and involved profuse salivation and urination.


Paracelsus' gold chloride was still prescribed in the 17th century, sometimes coated with gold to make gilded pills

LOBOTOMY 1888

With no surgical experience, Swiss doctor Gottlieb Burckhardt operated on patients with schizophrenia and psychotic hallucinations using a trephine (a round bone saw like a cookie-cutter on a stick) to drill holes near the temples. He cut through the brain's dura and scooped out parts of the cerebral cortex with, in some cases, a sharp spoon. But while it was the first lobotomy, the term was only later coined by US neurologist Walter Freeman, who partnered with neurosurgeon James Watt in 1936 to 'cure' mental health. They famously performed an unsuccessful operation on Rosemary Kennedy, the sister of President John F. Kennedy. Lobotomies also left many patients incapacitated or caused them to die from haemorrhaging.

Freeman (left) was no charlatan, but he bypassed neurosurgeons (including Watt, right) by performing his own lobotomies using ice picks

Composer Wolfgang Amadeus Mozart lost an estimated four pints of blood in his final week thanks to blood-letting

Franz Mesmer

1734 – 1815, GERMAN

Franz Mesmer was a young doctor who believed every disease was the result of an imbalance in the body of a universal magnetic fluid susceptible to gravitational force. He believed that by laying his hands on patients and engaging his willpower, he could manipulate this fluid and heal the sick.

BLOOD-LETTING 1623

The earliest evidence of blood-letting actually dates back to the Egyptians in around 1500 BCE, but in medieval Europe barber-surgeons would attempt to bleed away smallpox, epilepsy and plague. Bizarrely, in 1623 French physician Jacques Ferrand even thought the practice could cure lovesickness - particularly if the sufferer was "plump and well fed". His recommendation for a broken heart was blood-letting to the point of heart failure (literal heart failure, that is). He also noted that, "The opening of the hemorrhoids is the surest remedy."

> "His recommendation for a broken heart was blood-letting to the point of heart failure"

Dr Isaac Thompson

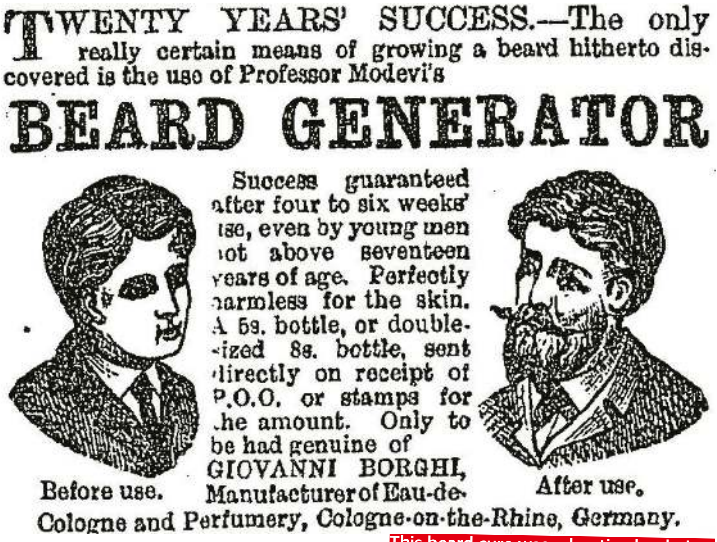
1775 - 1852, AMERICAN

Dr Isaac Thompson wasn't actually a doctor, but he patented and marketed a cure-all for eye complaints. It was introduced in 1795 and continued to be sold into the 20th century. In 1906 it was found to contain opium as an ingredient, explaining its popularity.

EATING DIRT 500 BCE

The practice of geophagy - eating dirt - is ancient. In 500 BCE the inhabitants of Lemnos, a Grecian island in the Mediterranean, harvested red medicinal clay from a particular hill on a special day each year. It was washed, refined, rolled to a particular thickness and formed into little tablets, then the island's priestesses blessed and stamped them with their official seal. But while clay slows down the absorption of drugs within the digestive tract and is helpful for healing wounds, the quackery part comes from the religious significance attached to the hills of Lemnos. These were claimed to enhance the pill's power.

Medicinal clay was dubbed terra sigillata (sealed earth). Ottoman Turks were convinced clay from Armenia cured the plague



TWENTY YEARS' SUCCESS.—The only really certain means of growing a beard hitherto discovered is the use of Professor Modevi's

BEARD GENERATOR

Success guaranteed after four to six weeks' use, even by young men not above seventeen years of age. Perfectly harmless for the skin. A 5s. bottle, or double-sized 8s. bottle, sent directly on receipt of P.O.O. or stamps for the amount. Only to be had genuine of GIOVANNI BORGHI, Manufacturer of Eau-de-Cologne and Perfumery, Cologne-on-the-Rhine, Germany.

Before use.

After use.

This beard cure was advertised as being "perfectly harmless for the skin"

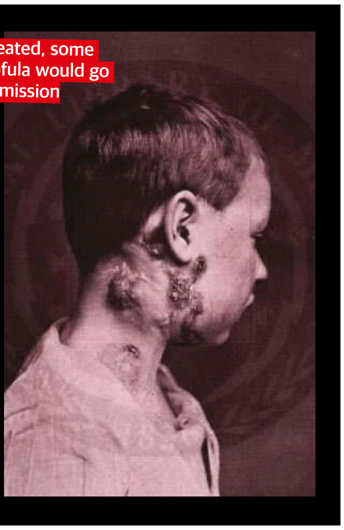
BEARD GENERATOR 1885

Victorian England was probably the worst time in history to be a man who couldn't grow facial hair because chest-length beards, bushy sideburns and elaborate moustaches were all the rage. To help, an advertisement for a topical treatment called 'Professor Modevi's Beard Generator' ran in London newspapers, claiming to generate robust beard growth from a mere four to six weeks of use, even by "young men not above seventeen years of age." Created in Germany, the concoction cost 5 shillings a bottle.

THE KING'S TOUCH

11TH CENTURY

Scrofula is a form of tuberculosis that infects the lymph nodes in your neck, producing large, unseemly growths that continue to expand with time. Rarely fatal, it is quite disfiguring, but it was widely believed that it could be cured by the touch of a king. This became legitimised as a medical practice in 11th-century Britain and France when kings would touch scrofula-infected peasants. As a demonstration of their divinely granted healing prowess, King Edward the Confessor of England (c. 1000-1066) and King Philip I of France (1052-1108) began holding public exhibitions of scrofula healing.



If left untreated, some cases of scrofula would go into remission

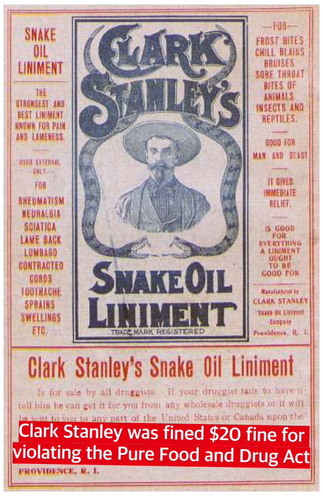
Johanna Brandt

1876 - 1964, SOUTH AFRICAN

In 1925 Johanna Brandt introduced her Grape Cure for cancer. The idea was to fast for several days, then use enemas, and then eat seven meals of grapes every day for two weeks. The American Cancer Society has debunked the practice on four separate occassions.

SNAKE OIL MID-1800S

Chinese snake oil - used for centuries - is made with the fat of Chinese water snakes. It is high in omega-3 fatty acids and an effective anti-inflammatory. It was used as a topical medicine during Chinese immigration to the American West in the 1800s. In 1893 Clark Stanley began selling Snake Oil Liniment, cutting open rattlesnakes before massing crowds, plunging them into boiling water and using the rising fat. Unfortunately, rattlesnakes are less beneficial than water snakes. What's more, the snake oil he sold away from crowds contained only mineral oil, beef fat, red pepper and turpentine - with little to no snake at all.



Clark Stanley was fined $20 fine for violating the Pure Food and Drug Act

Dinitrophenol was used to treat 100,000 people in its first year of sale in the United States

DINITROPHENOL 1934

A compound called dinitrophenol entered the market as a weight-loss medicine around 1934, and it succeeded in rapidly increasing metabolism. Yet since it was also used to create explosives, was carcinogenic and had a nasty habit of killing people as they were "literally cooked to death" by the rapid increase in body temperature, it is little wonder it disappeared from the market just four years later. As if to underline how bad it was, those who didn't die could develop a rash, experience a loss of taste or become blind.

In Europe thousands of Egyptian mummies preserved in bitumen were ground and sold as medicine

MEDICINAL CANNIBALISM

1ST CENTURY CE

In the 1st century Pliny the Elder wrote that "the blood of gladiators is drunk by epileptics as though it were the draught of life." As time went on, however, eating human flesh also became popular. Puritan Edward Taylor wrote the 18th-century *Dispensatory* describing how the dead human body contained a wealth of cures – claiming the marrow of bones was good for cramps, gallbladder "relieveth in Deafness" and dried heart cured epilepsy. Later, executioners made a pretty penny off the skin and fat of dispatched criminals. "Oil of human fat" was employed for wound healing, pain relief, cancers, love potions, gout and rheumatism.

SPANISH FLY 1810

The Spanish fly is a type of blister beetle, and it contains a compound called cantharidin, which causes blistering when applied to the skin. In the early 1800s a London dispensary offered a recipe containing a pound of beetle powder, a pound of wax and a pound of lard. This paste was applied to the skin for as long as it took to form a blister. It would be applied to the abdomen for stomach ailments or the lower legs for gout. If the patient became delirious, he would be blistered on the head instead. Unfortunately for some, the blisters caused gangrene, where the underlying flesh simply died and blackened.

Rashes were thought to be the pathway to healing, so it was thought irritating the skin could cure

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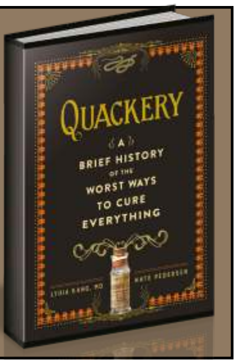


This article is made up of extract from Lydia Kang and Nate Pedersen's history of medical misfires and malpractices. Available now for £16 from Workman Publishing.

What if...

Attila the Hun had survived his wedding night?

While not the bloodthirsty conqueror the Romans painted him as, the Hunnic emperor's enduring presence would have shifted the balance of power and redrawn Europe

Written by Jonathan O'Callaghan

INTERVIEW WITH... DR HYUN JIM KIM

A senior lecturer in Classics at the University of Melbourne, Dr Hyun Jim Kim is an expert on all things Attila. He is the author of *The Huns, Rome and the Birth of Europe* and other books examining the Hunnic Empire and Asia's role in the fall of Rome.

How important was Attila the Hun in the history of the Hunnic Empire?

Some say he was the only thing that held the whole creaky structure of the Hunnic Empire together in the middle of the 5th century. But my view is a little bit different.

I think the Huns inherited quite a sophisticated political model – even before Attila came to the throne, it was already in place – so he was the last powerful king of a united Hunnic states, who inherited political powers from his predecessor. He was more of a cautious leader, not that aggressive despite the literature that portrays him as a megalomaniac seeking world conquest.

In fact, if you look carefully at what he does, he is very cautious in battle. Instead of seeking to conquer the Roman Empire and create a huge territory like the Mongols, for example, he tried to levy tribute from the Eastern and Western Romans. He was a very traditional Hunnic king, in my opinion. His invasions were designed not to conquer the Roman Empire, but to subject the Romans to the payment of tribute in order to build an inner Asian tributary empire.

Was Attila's rule different to his predecessors?

The Huns had two kings, who ruled over the two halves of the empire. The Eastern King was normally superior of the Western king. But Attila staged a coup and overthrew his brother in the East, and the power equation was reversed. That caused all kinds of problems later, and it was part of the reason the Hunnic state imploded after Attila died, because the East refused to accept subordination to the West, and it started a civil war.

What was his plan leading up to his death?

He wanted to force the Romans, the Eastern and Western half, to pay tribute to him. What the Huns would do was conquer outright states close to them, so the Germanic tribes were directly ruled by the Huns. But once you go beyond the territory the Huns regarded as quintessential to their empire, then you come to more distant regions where the levying of tribute was enough. The Romans fell into that category.

In 447 CE, Attila invaded the Eastern Roman Empire and annexed a huge chunk of the Balkans. But then immediately afterwards, he negotiated to give it back because he wasn't interested in territory. What he was interested in was getting a steady flow of tributes, which would enhance his prestige among the Hunnic elite. The objective wasn't to bleed the Romans dry – it was to gain prestige. This was necessary because Attila was a usurper [he had killed his brother to become the sole ruler of the Huns].

Was he trying to conquer Europe?

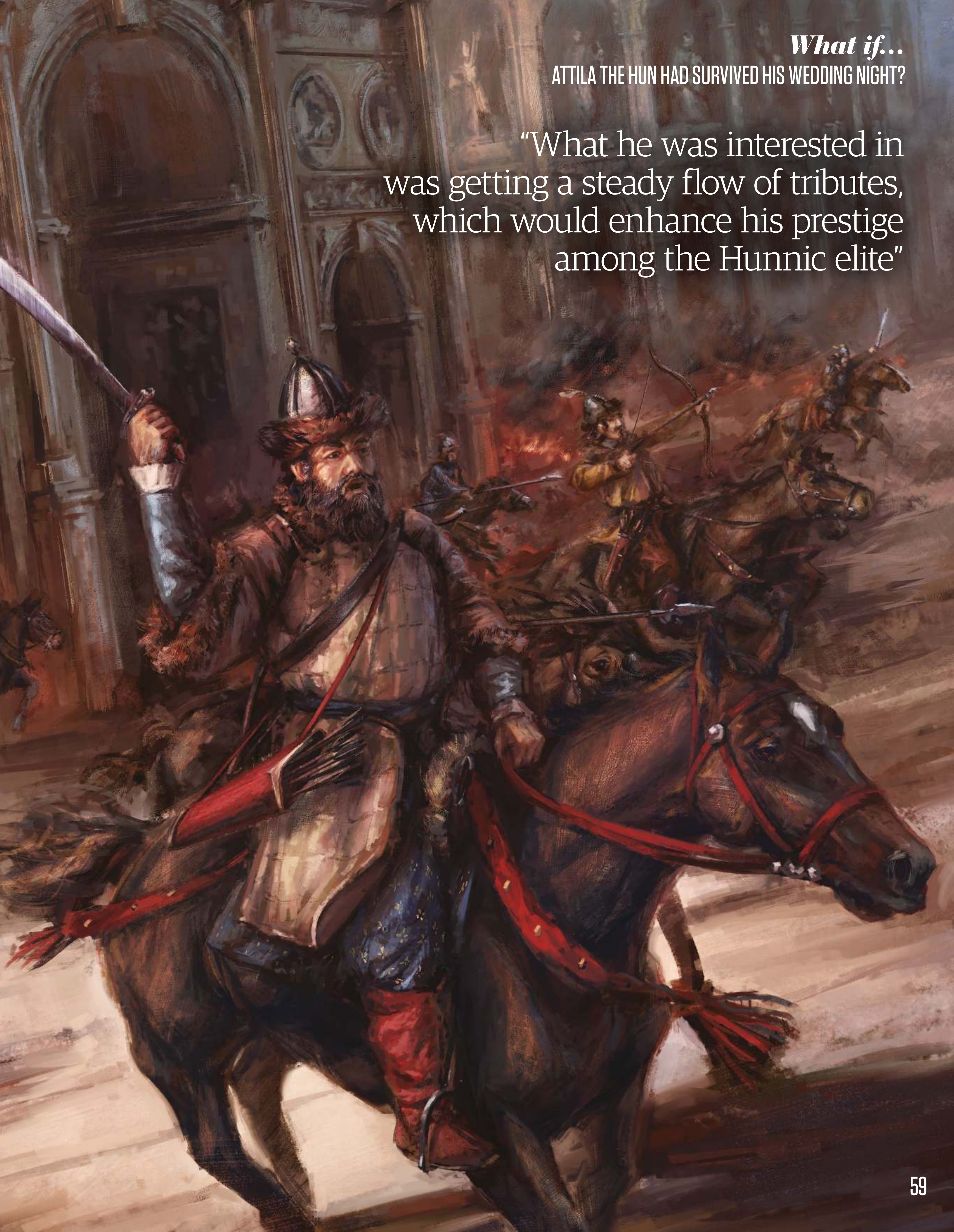
Priscus, one of the primary sources on Attila's reign, says his objective was nothing less than the conquest of half of the Roman Empire. Of course the Romans would have felt it like that – they wouldn't have thought an invasion of that magnitude could be anything but an outright conquest. But what's curious is that when the Huns invaded, they would sack cities, try to extract tribute from them and then just withdraw again after a major battle or great siege.

I would say Attila's motivation was to force the Romans into a tributary system as he understood it. In fact, at the time of his death, he was planning another invasion of the Eastern Roman Empire because the incumbent Roman emperor of the East, Marcian, had refused to pay the tribute that his predecessor had promised.

What do we know about Attila's death around 453 CE?

Well this comes solely from Priscus. Attila had many wives and he took another one [named Ildico]. After cavorting during his wedding night and drinking too much, he burst a vein and choked on his own blood. In the morning when the Hunnic nobles realised something was wrong, they rushed in and

The Romans feared that Attila would not rest until he had conquered Europe



> “What he was interested in was getting a steady flow of tributes, which would enhance his prestige among the Hunnic elite”

found the new wife weeping and the king dead, drowned in his own blood. This is the image that Priscus wanted to create – that of a bloodthirsty tyrant who got his just desserts by divine judgement.

Whether he really died that way or not, who knows. He was actually at an advanced age, probably in his 50s at the time, the normal age of death at the time, so there's no reason to suspect that he was poisoned. Right there after he died, there was a huge civil war because his sons couldn't agree what would go to whom. There was a huge civil war between the Eastern and Western half [of the Hunnic Empire] and then, of course, the state imploded as a consequence. The Eastern half survived but the Western side completely fragmented.

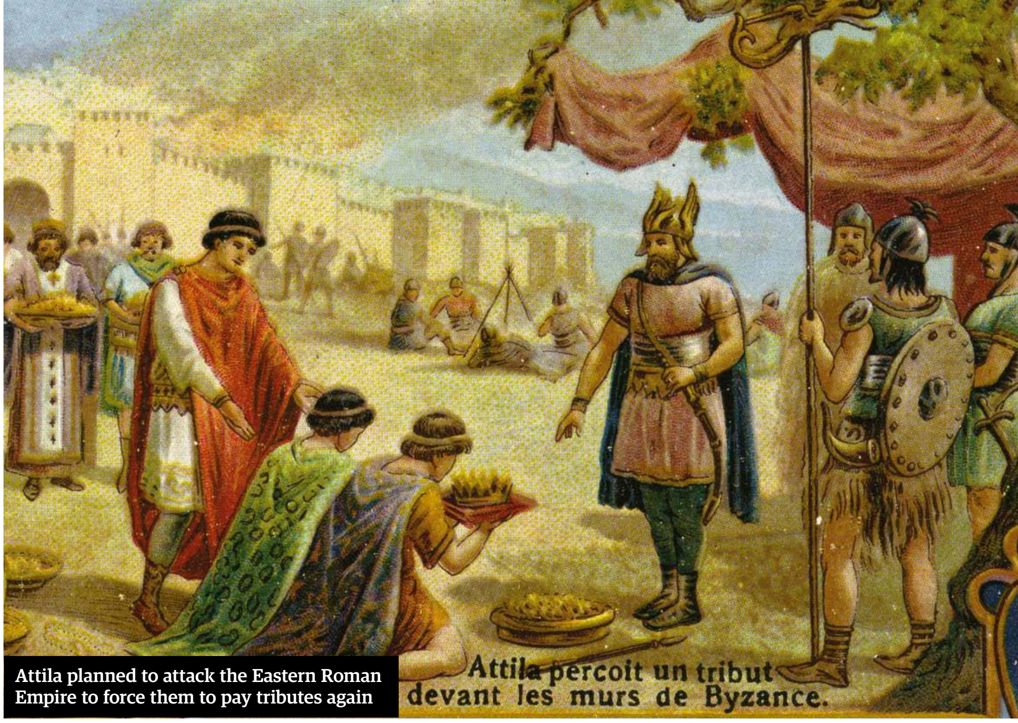
If Attila hadn't died that night, what do you think would have happened?

My guess would be that he would have invaded the Eastern Roman Empire. They did not have a sizeable army with which to attack the Huns, so it's unlikely they could have defended the Balkans from another Hunnic incursion. But Attila wouldn't have been able to take Constantinople because he had no navy – a prerequisite to take that impregnable fortress – so he probably would have rampaged through the Balkans yet again and the Eastern Romans would have ended up paying some kind of tribute to pay him off as usual.

Would this have meant the Roman Empire would have fallen earlier that 476 CE?

The Western Roman Empire would never have disintegrated in the way it did after his death. That's a bit of a perplexing statement but the reason that it collapsed in 476 CE is because there was a whole bunch of Germanic tribes and Hunnic troops that were originally under the rule of the Huns that left the Hunnic state and marched into Italy. They were the ones who put an end to Roman imperium in the West.

If Attila had not died, and had been able to control those tribes, then of course the Western Romans would have paid a bit of tribute, but their rule in Italy would have remained intact. We might have actually seen a continuation of the Western Roman Empire for a lot longer than what actually happened in history.


Attila perçoit un tribut devant les murs de Byzance.

Attila planned to attack the Eastern Roman Empire to force them to pay tributes again

> "He could have conquered Europe, but I don't think he would have"

How would Europe have been different after that?

We would never have had a Frankish Europe. When the Hunnic Empire imploded and the Western Roman Empire followed suit, there was an incredible power vacuum in Western Europe. This allowed the Franks to unify what is essentially Western Europe and that evolves into the Holy Roman Empire.

If neither the Western Roman or Hunnic Empires dissolved, then we would have had a state called Hunnia somewhere in Europe and the Franks would have been confined to Belgium and the Netherlands. France would be in Belgium rather than what is now France.

Would Attila have tried to conquer the Roman Empire?

No, I seriously doubt that. First of all, the Hunnic Empire was already massive. It had extended to such a degree that it was difficult to control under a single ruler. That's what Attila effectively attempted – he created a dictatorship and tried to run things by himself and that caused all kinds of problems.

How would it be different?

Real timeline

Attila comes to power
Following the death of Rugila, Attila and his brother Bleda become rulers of the Huns in the West and East respectively. **434 CE**

Betrayal of brother
Attila likely murders Bleda and becomes the single ruler of the Huns, shifting their centre of power west. **445 CE**

A new target
Attila begins plotting a new attack on the Eastern Roman Empire to force them to pay tribute to him. **452 CE**

Death of Attila
After marrying an East German woman, Ildico, Attila dies on his wedding night, possibly after choking on a severe nosebleed. **453 CE**

The Huns divided
The empire is split between Attila's three sons but civil war soon breaks out. **454 CE**

Real timeline

Alternate timeline

Attila rides on
Attila marries Ildico but their wedding night passes without incident. The next day, he rides for Eastern Rome. **453 CE**

Balkans defeated
Attila easily defeats the Eastern Roman Empire, sacking the Balkans. But he leaves immediately, after receiving tributes. **454 CE**

He was executing Hunnic princes left and right and oppressed Hunnic princes were fleeing to the Eastern Roman Empire. That was one of the main reasons Attila went to war with the Eastern Romans – because Constantinople was harbouring fugitive Hunnic princes.

I think that he might have replaced an emperor or two if he had lived longer, or possibly enthroned somebody who was more to his liking and paid regular tribute. That is shown by the fact that he even just gives or is willing to give back territories conquered in the Roman Empire. He has no interest in ruling them.

Did he have that much power, to dictate who became emperor?

Possibly. He had an army no nation could withstand, so in terms of military strength the Huns were stronger than either the Western or Eastern Romans at the time. Militarily, he could have imposed a rule to his liking on the Romans if he wanted to push that far – but, as I said earlier, he was a very cautious man, so he was unwilling to engage too deeply in prolonged overseas campaigns. He was always fearing some kind of rebellion at home, so he couldn't vacate his territories too often. These campaigns against the Romans were more a display of strength – not only to the Romans, but also to his Hunnic subjects.

Could he have conquered Europe if he had wanted to?

He could have. But then he would have destroyed his own state in the process. The conquest actually happens, the Hunnic troops from Hunnic territory later conquer Italy and create the first barbaric kingdom of Italy, so that could have happened. But if I was Attila, would I risk the disintegration of my empire, just to add more territory that was difficult to govern? I don't think so. The answer would be yes, he could have conquered Europe, but I don't think he would have.

How long would the Hunnic Empire have lasted?

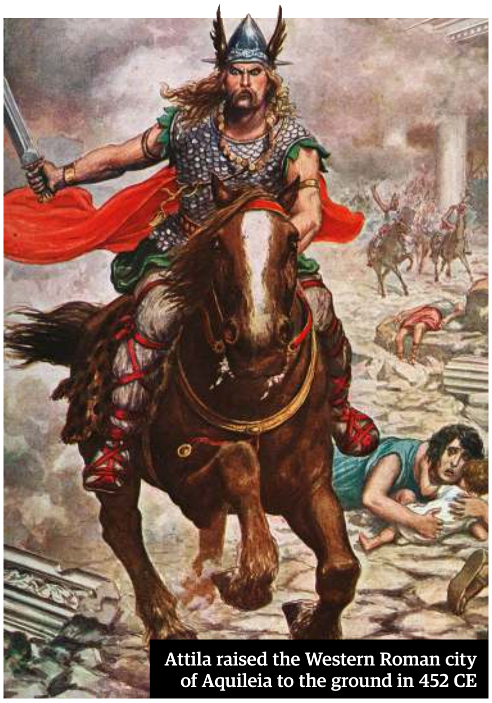
The Hunnic Empire in Europe collapsed about 80 years [after Attila's death]. If he had been able to secure successions in an orderly fashion, then it probably would have lingered on for another century or so and we would have seen a vastly different Europe geopolitically than now. In essence, you get pretty similar borders, except that maybe instead of a Germany confined to what it is now, you might have had a larger Germany that includes Austria, the Czech Republic, Hungary and bits of Poland.

How would Attila's legacy have been different?

If he had lived longer and established a long-lasting dynasty that produced a line of kings, then I think we'd probably be talking about Attila in the same way we talk about Clovis, the king of the Franks. We often talk about Attila as an alien king who invaded from Asia, but that's not true. He was the fourth generation of the first Huns who entered Europe. He was basically European, and Hunnic remains show that the Huns were completely European in appearance, so he was basically a European ruler who could speak multiple languages. If his descendants became Germanic kings of Germany, he would be considered as just another European ruler. That's how he would be regarded – not as someone who was about to destroy European civilisation.

I think the literature on Attila tends to dramatise the Battle of the Catalaunian Plains, the big conflict between Aetius and Attila, a clash of East and West. Europe was apparently saved because the Huns were stopped there. That's not true, because the composition of the armies in the battle were practically the same. It didn't really matter who won in terms of the trajectory of European civilisation.

Even if Attila had conquered all of Western Europe – if he had bothered to do so – the empire would inevitably have become Christian and the culture of the aristocracy would have been Germanic. You're looking at the same kind of Europe even with Attila fighting on, and he would be remembered as another Germanic king.


Attila raised the Western Roman city of Aquileia to the ground in 452 CE

Sacking of Rome
Rome is sacked by Vandals, signalling the beginning of the end for the Roman Empire. **455 CE**

White Huns
The White Huns, or Hephthalites, lead raids into India, continuing the legacy of the Huns. **470 CE**

Fall of Rome
The Roman emperor Romulus is overthrown by the Germanic leader Odoacer. The Roman Empire is finished. **476 CE**

Rise of the Franks
Clovis, king of the Franks, sweeps through Europe, leading eventually to the formation of the Holy Roman Empire. **486 CE**

Barbarians tamed
Germanic tribes and Hunnic troops remain under the rule of the Huns, rather than marching into Italy. **466 CE**

The Huns collapse
The Hunnic Empire collapses, leaving barbarian and Germanic tribes in its place to head for Europe. **469 CE**

Franks weakened
Clovis, king of the Franks, does not unify Western Europe as there is no power vacuum to fill any more. **486 CE**

France sidelined
The Franks are confined to Belgium and the Netherlands as the Hunnic Empire continues to dominate Europe. **500 CE**

Huns united
Attila manages to keep the Hunnic Empire together with the centre of power remaining in the west in Hungary. **460 CE**

Roman Empire continues
The Roman Empire lives on as Attila does not conquer Europe – but ensures a regular supply of tribute flows after his death. **476 CE**

Attila's successors
With a clear line of succession laid out, Attila's sons continue his reign and keep the Huns united. **480 CE**

Welcome to Hunnia
The Huns create a state known as Hunnia in Europe, as their empire lives on for more than a century. **490 CE**

Greater Germany
Attila leaves behind a Germany that includes modern-day Austria, the Czech Republic, Hungary and parts of Poland. **510 CE**

BONE WARS

The bitter feud between two 19th-century fossil hunters that spurred some of history's most significant dinosaur discoveries

Written by Erlingur Einarsson

From Wyatt Earp versus the Tombestone Cowboys, to General Custer facing off with Sitting Bull, the American Old West is famed for its blood feuds. However, for palaeontologists, this era conjures up one image above all: the bitter rivalry between two of America's greatest fossil hunters, Othniel Charles Marsh and Edward Drinker Cope. Known as the 'Bone Wars', the competition between these oversized egos stretched from the 1870s well into the 1890s and led to the discovery of hundreds of dinosaurs. However, it also involved bribery, theft, the destruction of evidence, and both the figurative and literal throwing of stones.

Edward Drinker Cope was born in 1840 in Philadelphia, Pennsylvania, to wealthy Quaker parents, Alfred and Hanna. While working part-time at the state's Academy of Natural Sciences, Cope published his first scientific paper in 1859, still only 19 years old. He also studied, catalogued and even reclassified a number of the academy's specimens. His passion for science led him to learn French and German so that he could read the latest natural history research. In 1863, possibly to escape the draft for the American Civil War, Cope went one step further and travelled to western Europe, which was at the forefront of palaeontology research at the time. It was here that he first met Othniel Charles Marsh.

Marsh was Cope's polar opposite. Born in 1831 in Lockport, in upstate New York, his family was comparatively poor. However, he did have a rich uncle, George Peabody, who paid for him to go the Philips Academy and later Yale University, from where he graduated in 1860. When the two men met at the University of Berlin, Marsh had two degrees under his belt, while Cope had little formal schooling beyond the age of 16.

Othniel Marsh and his assistants were armed with guns at their digs to fend off hostile and aggressive competitors

However, while Cope had published 37 papers, Marsh's tally stood at a relatively measly two. Cope was impulsive, sometimes rash and tempestuous, in the way he approached his work, while Marsh trusted in a colder, more calculated methodology in his research. The pair even diverged on ideological lines: Marsh embraced Charles Darwin's relatively new theory of natural selection, while Cope ardently advocated a theory of evolution called Neo-Lamarckism.

It's likely Marsh considered Cope a bit of a dilettante, not really serious about paleontology, while Cope saw Marsh as too rough and uncouth to be a true scientist. What they had in common, though, was their unbridled sense of self-worth and a drive to stop at nothing to succeed.

Perhaps due to this shared zeal, they struck up a professional friendship. Over the next few years, they frequently exchanged ideas, scientific manuscripts and even helped each other study and name fossils they found and received. But this amicable relationship took a sudden sour turn shortly after their return to the United States.

In 1868, Marsh noticed an embarrassing flaw with one of Cope's largest finds thus far, a near-complete specimen of the aquatic Elasmosaurus. Noticing Cope had placed the head of the plesiosaur at the tail-end of the skeleton, he called on renowned expert Joseph Leidy – one of the mid-19th-century's most influential palaeontologists and former mentor to them both – to back him up.

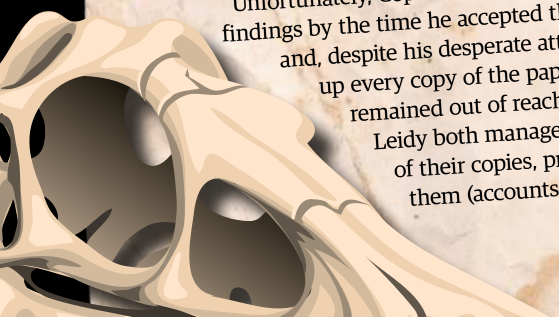
Unfortunately, Cope had already published his findings by the time he accepted the mistake and, despite his desperate attempts to buy up every copy of the paper, several remained out of reach. Marsh and Leidy both managed to keep hold of their copies, prompting one of them (accounts vary on who) to cruelly highlight Cope's humiliating mistake at his next society meeting.

Worse still, around the same time, Marsh went behind Cope's back in making an agreement with Cope's long-time collaborator, marl pit owner Albert Vorhees. Marsh paid the excavators to send any interesting finds to him, rather than to Cope. The time of collaboration was over. A friendship forged in mutual ambition would soon turn into a personal rivalry of prehistoric proportions.

It started as an academic war of words. Cope, incensed at Marsh publicly humiliating him, rushed to publish any findings he made in the field in the hope of gaining the upper hand by virtue of volume. At first, these revolved mainly about a series of ancient mammals and reptiles. However, Marsh's superior academic status gave him the strength to override any studies Cope had made, leading to Edward's frustrations mounting even further. On top of that, Marsh's Yale funding and powers of persuasion meant Cope was considered persona non grata at many of the dig sites Marsh explored over this period.

Cope did manage to get some retribution in the form of a general reclassification of Eocene mammals, where he substituted Marsh's genera for his own, more broad-reaching classification.

The Bone Wars kicked into a high gear in the mountains above the tiny town of Morrison, Colorado, in 1877. Schoolteacher Arthur Lakes had come across a large deposit of colossal bones in the fossil-rich sandstone and decided to not only notify Marsh of the finding, but also to send him some 680 kilograms of fossilised bones. For some reason, however, possibly due to a delayed response from Marsh, Lakes also sent a cache of fossils to Cope. Marsh soon found out, and rushed to publish his findings in the *American Journal of Science* ahead of Cope. Lakes wrote to Cope requesting he forwarded his bones on to Marsh.

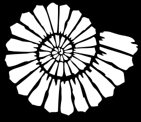


Evolution of antagonism

The clash between Cope and Marsh quickly developed beyond a war of words

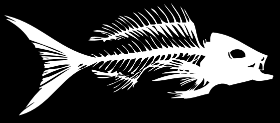
1868

The backstabbing begins
Marsh bribes the New Jersey marl pit managers Cope usually works with to send their future fossil finds to him at Yale instead.



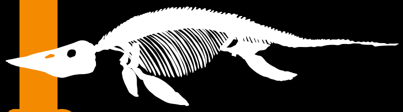
1871

Frontier prospecting
Both men go west to dig for fossils. Believing he has the greater claim because he arrived first, Marsh hires spies to track Cope's movements in Wyoming.



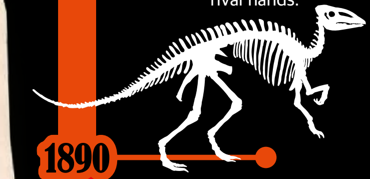
1873

Scientific snipping
Marsh and Cope attack each other's findings in scientific journals, quibbling findings and questioning who discovered species first.



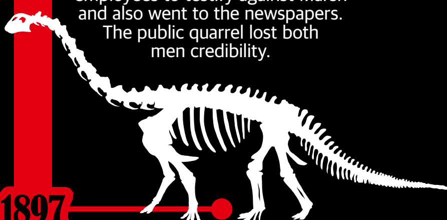
1878

Trench warfare
The professors' teams in Wyoming and Colorado openly fight one another as well as destroy unwanted fossils to keep them out of rival hands.



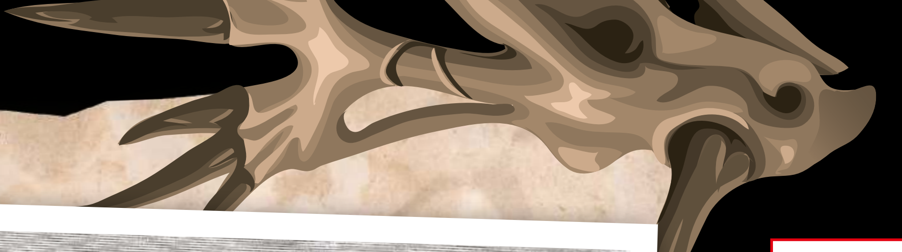
1890

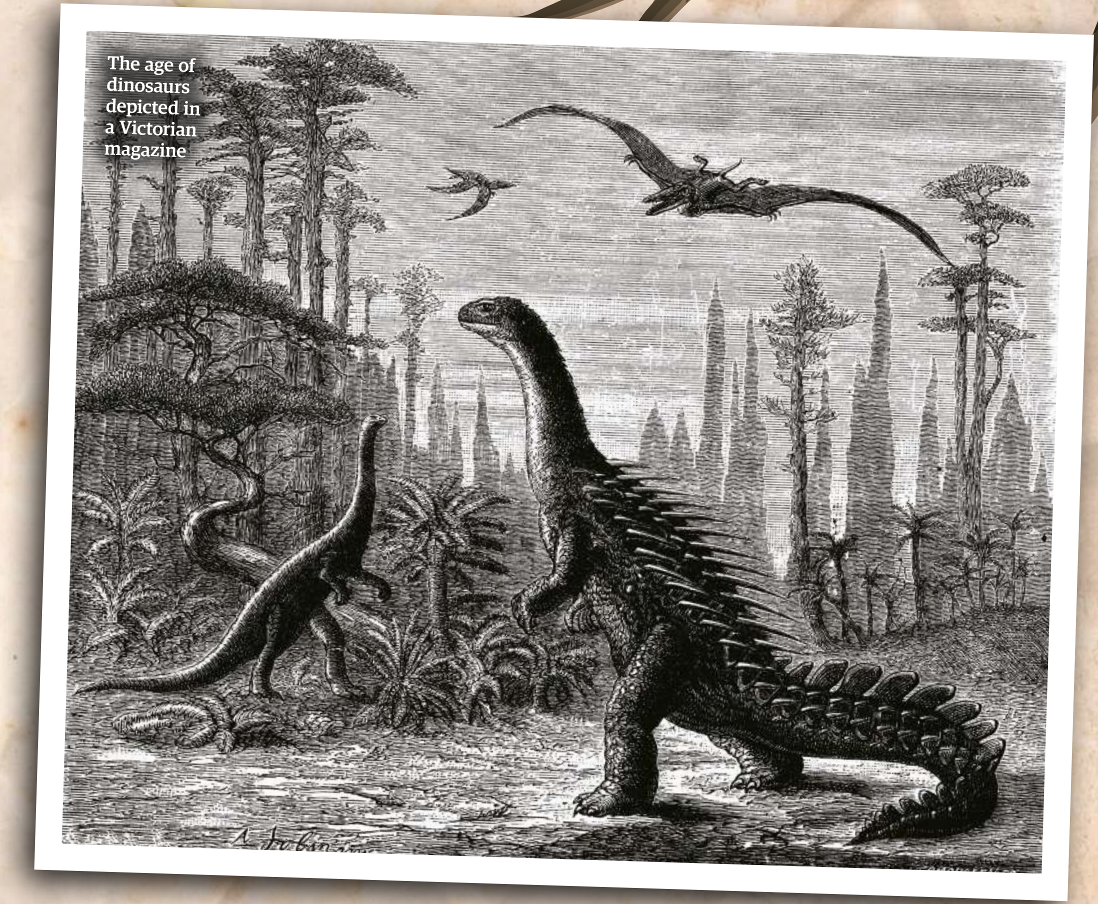
Public scandal
When Congress investigate the US Geological Survey, Cope recruits employees to testify against Marsh and also went to the newspapers. The public quarrel lost both men credibility.



1897

Extinction event
Even in death, Cope refused accept defeat. He donated his body to science on the condition that the size of his brain is compared to Marsh's. Marsh declined.





The age of dinosaurs depicted in a Victorian magazine

Of course, Cope took this as a grievous insult and it only spurred him into further action.

Shortly after, Cope received correspondence from neighbouring Canon City in Colorado and subsequently discovered bones from gigantic herbivores, dinosaurs larger than any Marsh had described so far – a point of great pride to Cope. Marsh, not one to be outdone, ordered a quarry to be set up as close as possible to Cope's dig, but after a fruitless pursuit of superior fossils there, and a near-fatal accident for Marsh's assistants in Morrison, he took his battalion of dinosaur hunters elsewhere – Como Bluff, Wyoming.

As the Transcontinental Railroad was being built through remote parts of Wyoming, news spread of rich fossil fields in the area. Marsh was the first to take advantage, quickly striking deals with teams of explorers and workers to make sure they wouldn't turn to Cope.

The results from these digs would turn out to be history-defining; among the finds in Como Bluff were fossils of what would become some of the most famous dinosaur species in history. These included Stegosaurus, Allosaurus and Apatosaurus, among a number of other notable finds.

Having been beaten to the punch yet again, Cope now resorted to desperate tactics. Sending 'dinosaur rustlers' to the area, he attempted to covertly steal fossils from Marsh's site.

After one of Marsh's main expedition leaders, Carlin, decided to defect over to Cope's site, things quickly took an ugly turn. On top of rapidly expanding digs, often conducted haphazardly, resulting in regular irreparable damage to invaluable fossils, hostilities between the camps escalated dangerously.

The teams would regularly sabotage each other's camps and dig sites, and small skirmishes would break out, with men throwing rocks at each other. Explosives were even used to destroy used dig sites in order to prevent the 'enemy' from making potential further discoveries; little regard was paid to smaller fossils by this point.

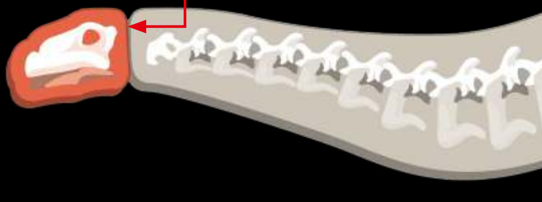
Both Marsh and Cope now joined the digs in person but their seemingly bottomless disdain for each other led to a surging wave of dissatisfaction among their respective teams. While Marsh's team soon suffered from mass resignations and in-fighting, Cope's was quickly running out of money to fund his resource-heavy expedition.

By the late 1880s, Cope was all but bankrupt, with Marsh not much better off himself. They had discovered over 130 new dinosaur species between them, with Marsh having named 80 dinosaurs, while Cope's tally stood at 56. Marsh had 'won' the Bone Wars, but at a great personal and professional cost to them both.

Forced to spend their laters relying on donations of fossils from third parties, they increasingly spent their discrediting each other via academic publications. In particular, Cope finally got his payback for the Elasmosaurus debacle. Cope discovered that Marsh had made a grave error in his assembly of a complete Apatosaurus, as its head turned out to belong to a Brontosaurus, an unrelated herbivore.

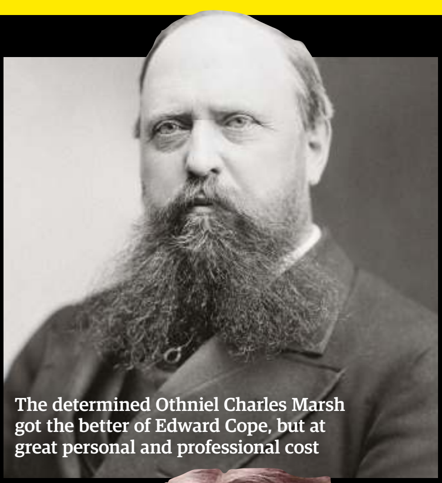
Wrong head

One of Marsh's most notable finds was the igantic Apatosaurus. Here, however, Marsh had placed the head of a Brachiosaurus on an Apatosaurus skeleton and named it Brontosaurus, a mistake Cope revelled in publicising.

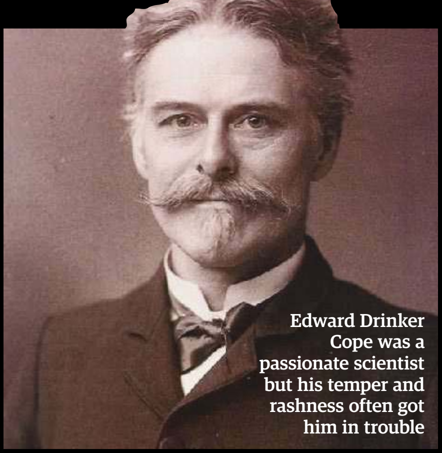


Too many toes

This specimen had splayed toes with too many claws, perhaps a result of the widespread belief dinosaurs were more related to modern-day reptiles than they've turned out to be.



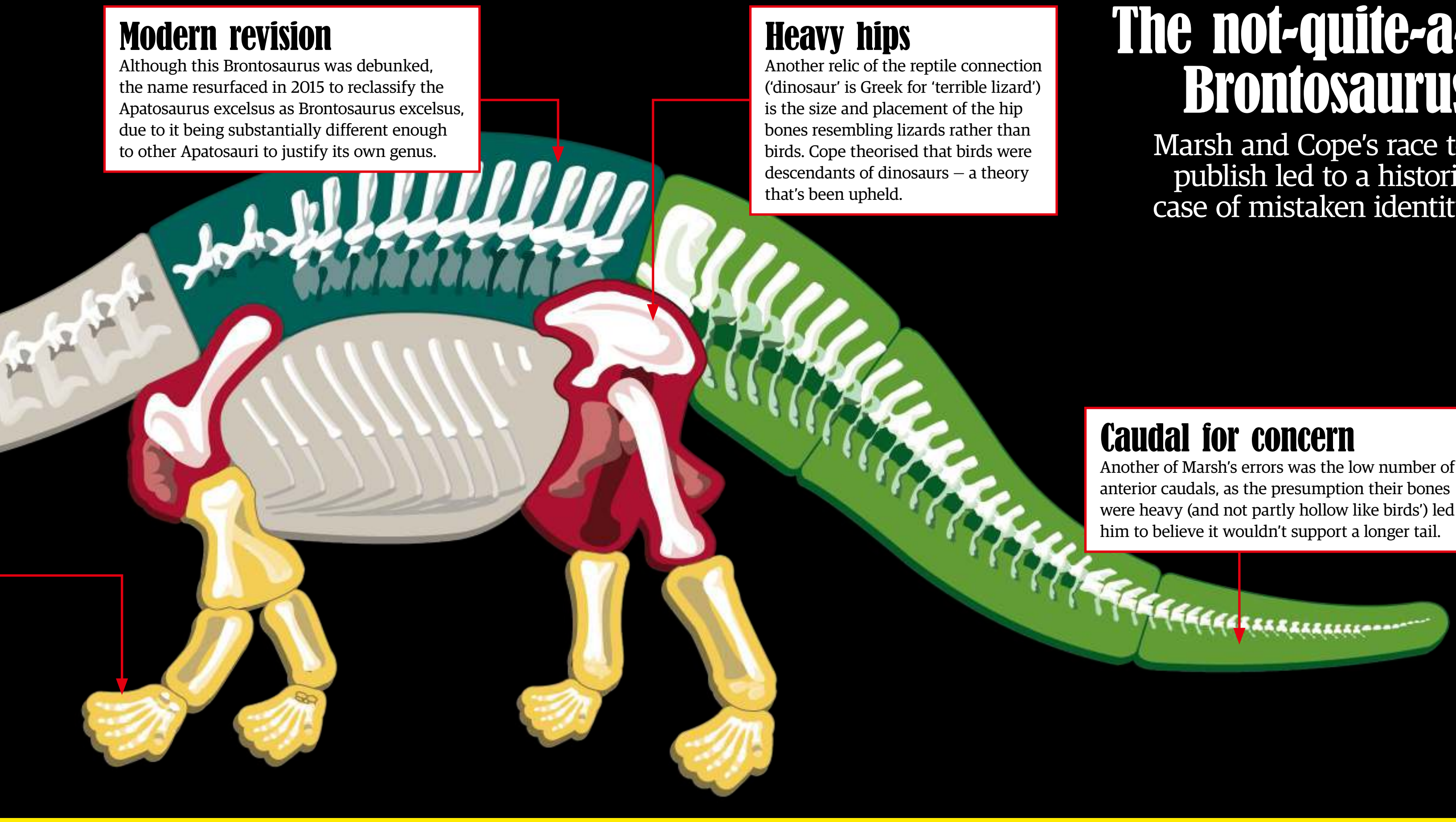
The determined Othniel Charles Marsh got the better of Edward Cope, but at great personal and professional cost



Edward Drinker Cope was a passionate scientist but his temper and rashness often got him in trouble

The not-quite-a-Brontosaurus

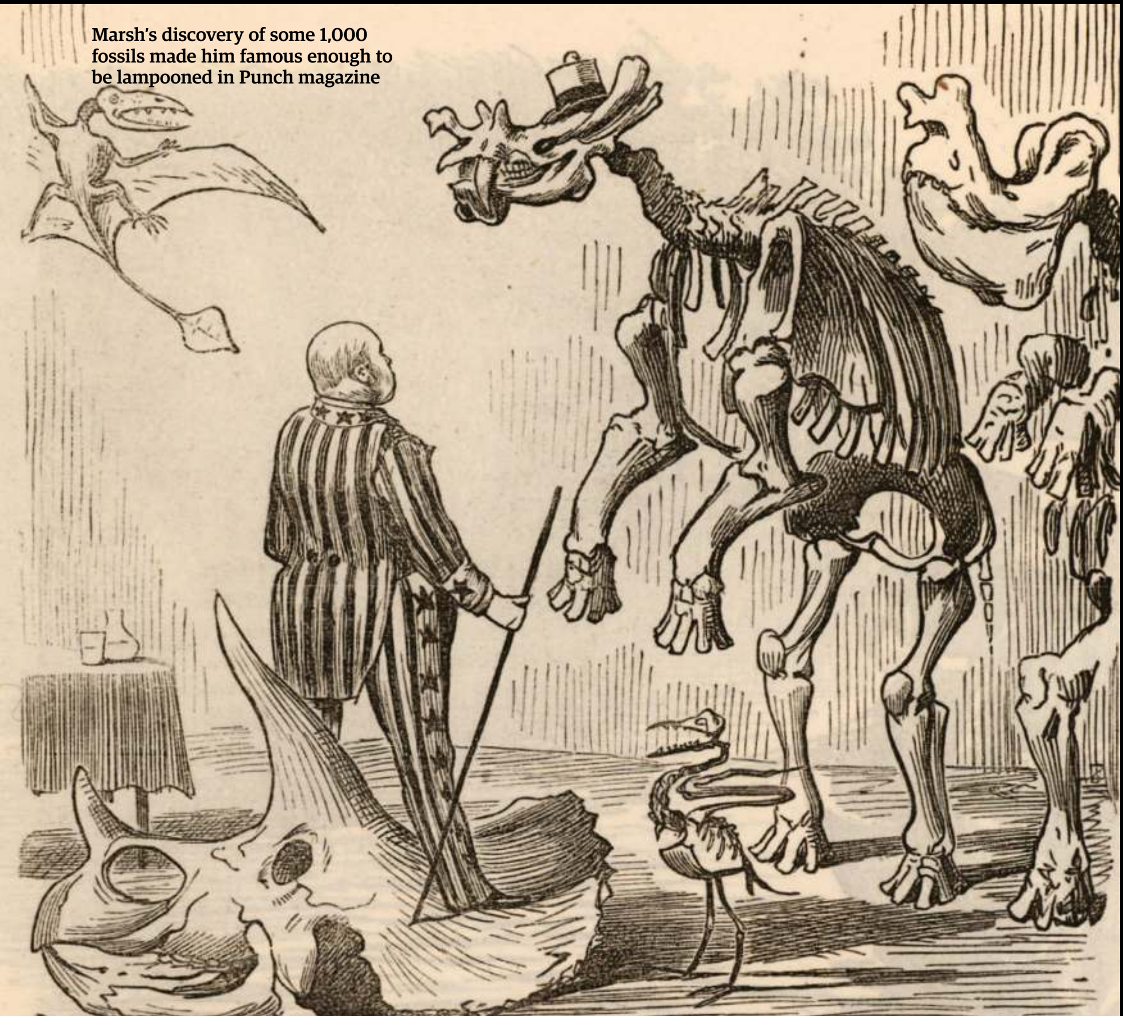
Marsh and Cope's race to publish led to a historic case of mistaken identity



Modern revision
Although this Brontosaurus was debunked, the name resurfaced in 2015 to reclassify the Apatosaurus excelsus as Brontosaurus excelsus, due to it being substantially different enough to other Apatosauri to justify its own genus.

Heavy hips
Another relic of the reptile connection ('dinosaur' is Greek for 'terrible lizard') is the size and placement of the hip bones resembling lizards rather than birds. Cope theorised that birds were descendants of dinosaurs – a theory that's been upheld.

Caudal for concern
Another of Marsh's errors was the low number of anterior caudals, as the presumption their bones were heavy (and not partly hollow like birds') led him to believe it wouldn't support a longer tail.



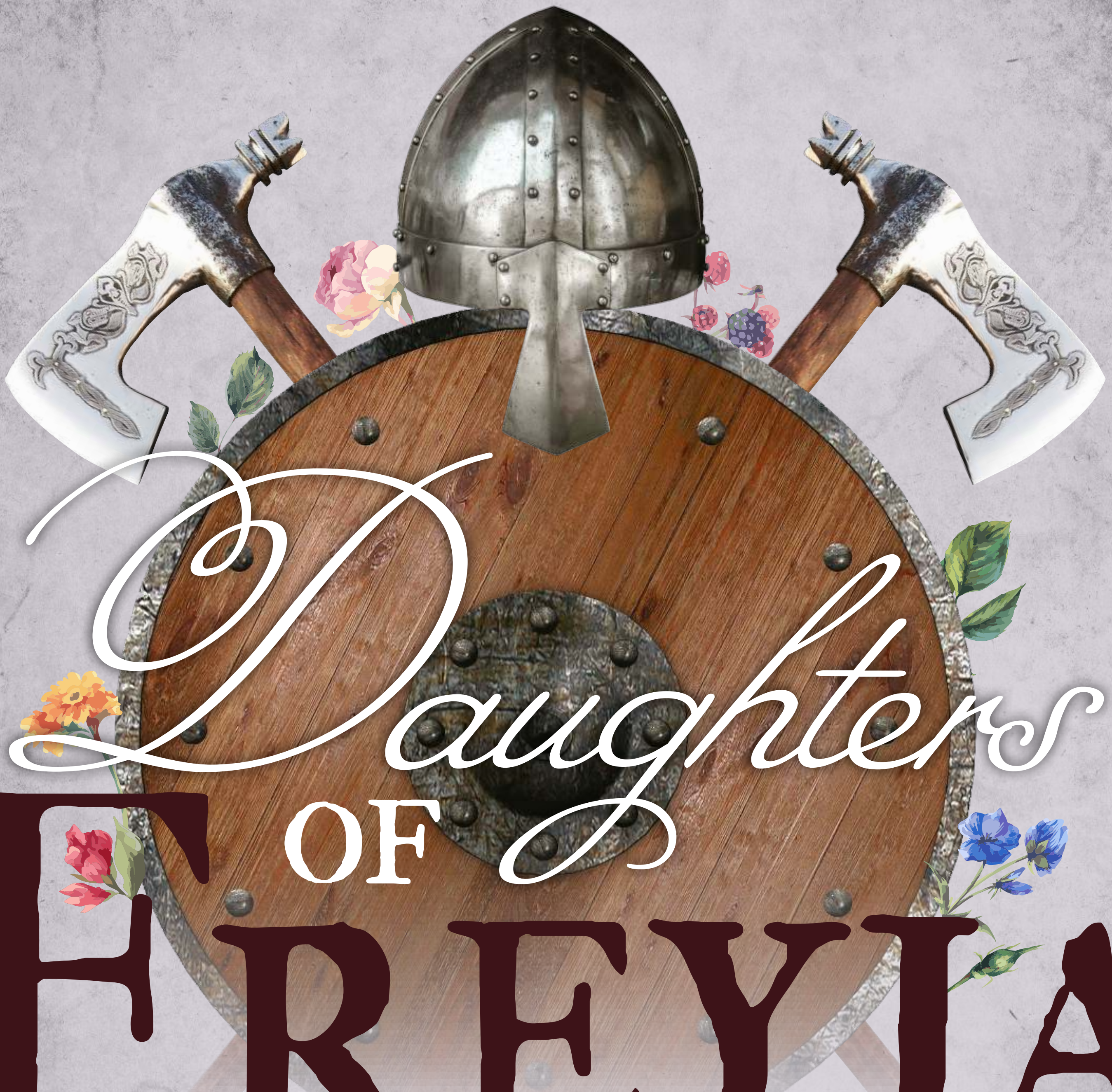
Marsh's discovery of some 1,000 fossils made him famous enough to be lampooned in Punch magazine

This was one of the final blows in their decades-long fight, and highlighted not only the depth of their rivalry, but also the rushed, error-prone and often unprofessional methodologies of 19th-century palaeontology.

The Bone Wars had put a stain on an entire field of science, drained the resources of two of the century's greatest palaeontologists and ultimately drained their health, too. Cope ended up falling seriously ill in early 1897, by that time sleeping in a cot surrounded by piles of his fossils, and died in April aged just 56.

His final jab at Marsh came after his death. Having had his body donated to science in a letter issued at his death, he challenged Marsh to do the same so that their skulls could be compared to see which one of them had a bigger brain. Marsh died of pneumonia only two years later in March 1899 at the age of 67 without ever responding to the challenge. He was interred in a graveyard in New Haven, Connecticut.

While many of their discoveries were less than accurate, they did lay important groundwork for today's field of palaeontology. And they certainly managed to ignite people's imagination and fascination with these ancient rulers of the Earth. The passion Cope, Marsh and many others put into their discoveries of dinosaurs in the 19th century, however fiery those turned, still inspires minds young and old today.



Daughters of Freyja

Written by Jessica Leggett

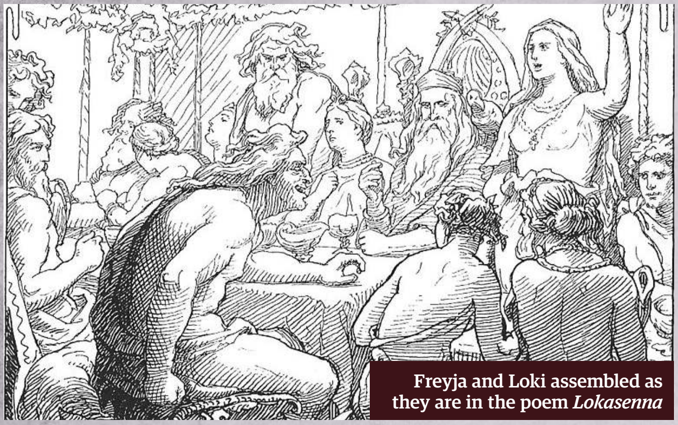
Discover the role of women in Viking society, their relationship with religion and their devotion to one Norse goddess in particular

From the one-eyed god Odin to his hammer-wielding son, the thunder god Thor, Norse mythology is full of colourful deities. They were an integral part of the Old Norse religion, paganism, which was displaced in Scandinavia by the end of the 12th century with the arrival of Christianity. However, out of all of them, there was one pagan deity whose popularity continued to rise after Christianisation: Freyja. Devotion to her remained strong among Norse women despite Christian attempts to stamp out her popularity.

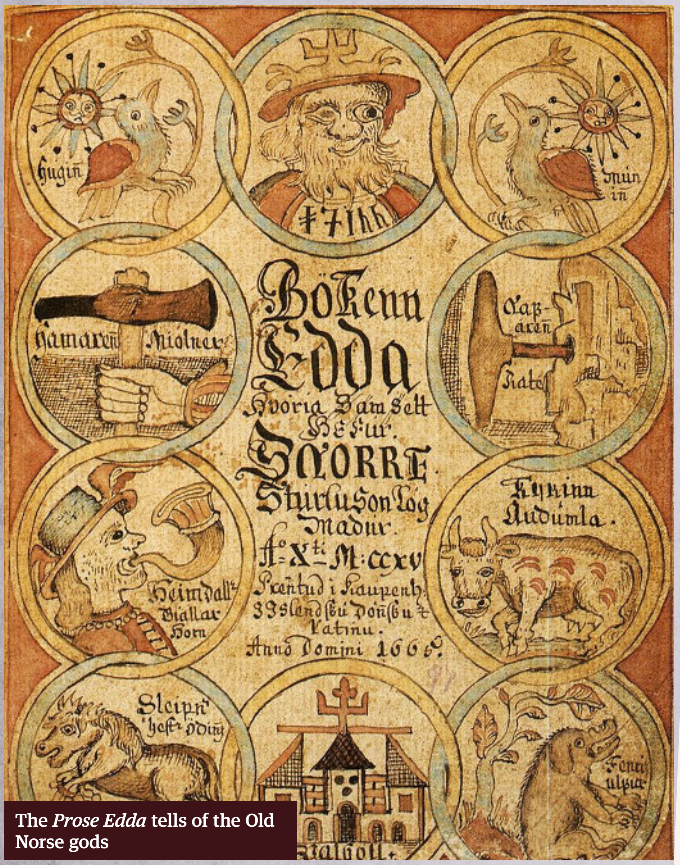
Freyja, along with her brother Freyr, was the child of Njörd and his sister, whose name remains unknown. She was married to Oðr and together they had two daughters, Hnoss and Gersemi, although Oðr's eventual disappearance leaves Freyja heartbroken. She is the goddess of love, sexuality, fertility, magic, war and death, portrayed in Norse mythology as a strong and independent deity, especially after the disappearance of her husband. The majority of the information regarding Freyja comes from the 13th-century Icelandic sagas, most prominently in the *Prose Edda* by Snorri Sturluson, who refers to her as "the most renowned of the goddesses."

If there is one thing that can be assured, it is that Freyja was definitely a goddess who was not to be messed with. For example, when the giant Thrym stole Thor's hammer, Mjölnir, he agreed to return it on the condition that Freyja was given to him as his wife.

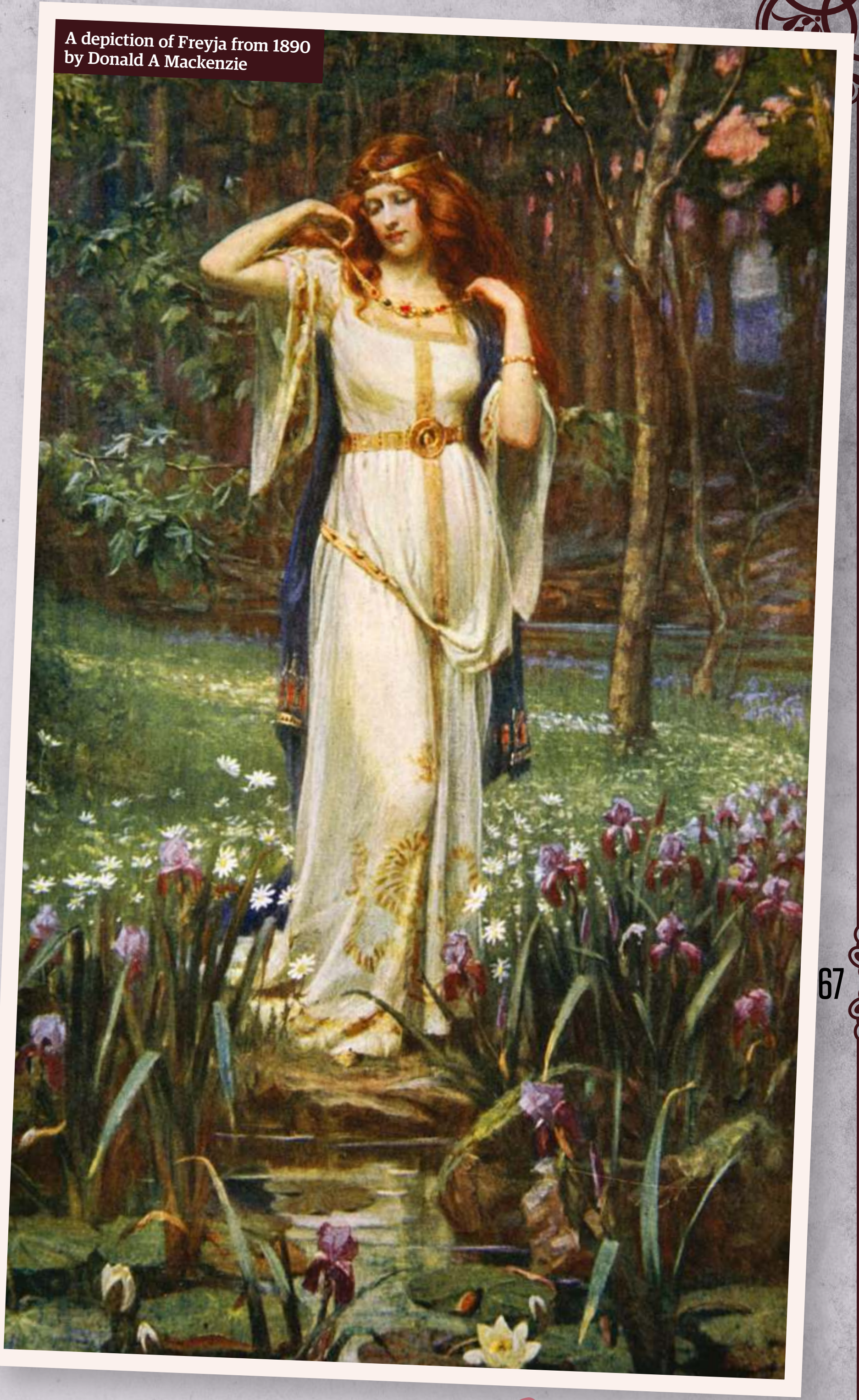
While Thor and the other gods were ready to cede to these demands, Freyja was left outraged and refused to cooperate. As a result, Thor was forced to dress up as a woman, pretending to



Freyja and Loki assembled as they are in the poem *Lokasenna*



The *Prose Edda* tells of the Old Norse gods



A depiction of Freyja from 1890 by Donald A Mackenzie

> “FREYJA WAS DEFINITELY A GODDESS WHO WAS NOT TO BE MESSED WITH”

be Freyja, to trick Thrym in order to regain his hammer. To the giants, Freyja was an object of lust and desire and was subject to their various plots and schemes to trap her into a marriage, as mentioned in the sagas.

Freyja's ability to refuse these marriages reflects the real-life situation of Norse women. Despite the image of brutish and forceful men that may be conjured up when thinking of the Vikings, Norse women generally couldn't be forced into a marriage against their will. Marriage was seen as an arrangement between families to build social alliances with each other, rather than as an institution of love. A male relative, usually her father or her brother, represented the bride during the marriage negotiations.

A happy marriage was in everyone's best interests as it was a financial investment. The bride's family were compensated for the loss of her labour, known as the bride-price, and the groom took her dowry. It was good practice to seek a bride's approval of her future husband – an unhappy match could lead to divorce, ending the alliance that had been built.

Surprisingly, divorce was a relatively easy affair for the Vikings, for both men and women. Wives had the same rights as their husbands to end their marriage and they were often the ones to initiate a divorce. A woman could request a divorce if she caught her husband wearing feminine clothing and, in turn, he could divorce her if she wore masculine clothing. In some cases, a marriage could be ended if a wife and her husband had not slept together for three years or, quite simply, because the couple were unhappy.

The most popular reason that was cited in the sagas for divorce was violence – if a man slapped his wife three times in front of witnesses, she could go for a divorce. Compared to modern court proceedings, Norse couples simply had to state their reasons in front of witnesses before it was officially confirmed. The division of property was also an easy process as each party essentially left the marriage with what was originally theirs.

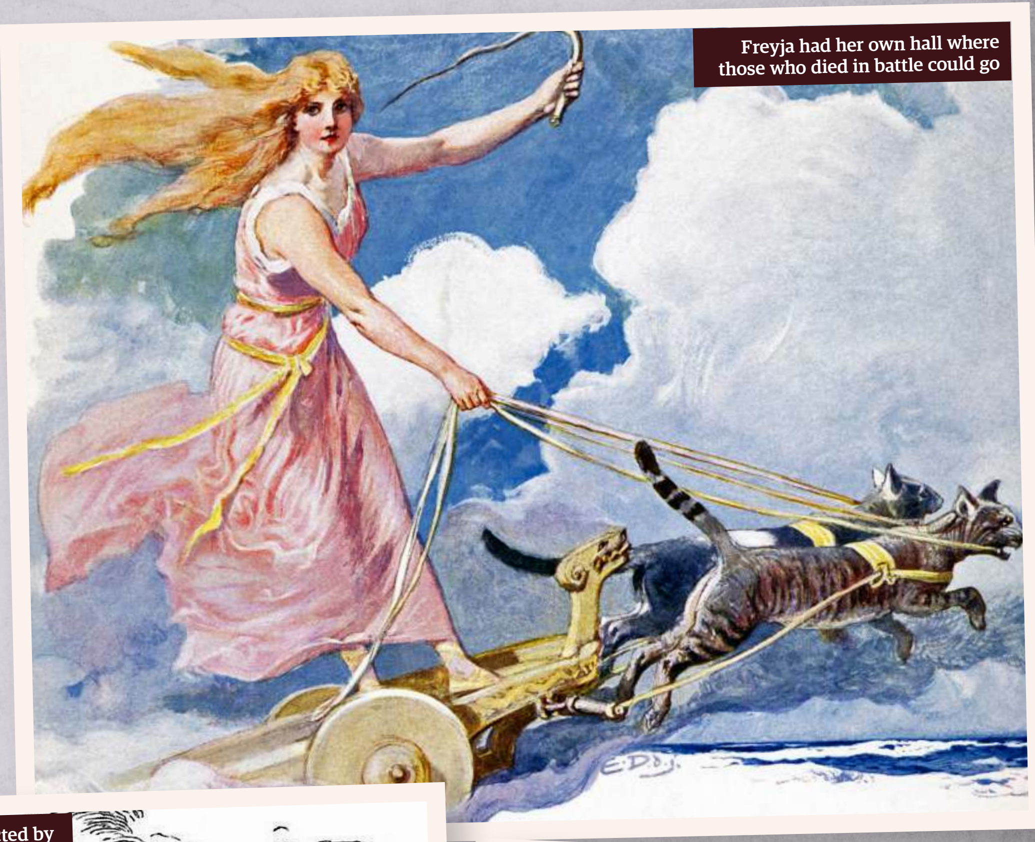
Although Norse women had a substantial level of independence when it came to marriage, they were still in an inferior position compared to the men in their society. It is easy, with sagas depicting tales of Freyja, shield maidens and strong, fierce women, to fall into the wishful trap that women held in a far more superior position than would be expected of the time.

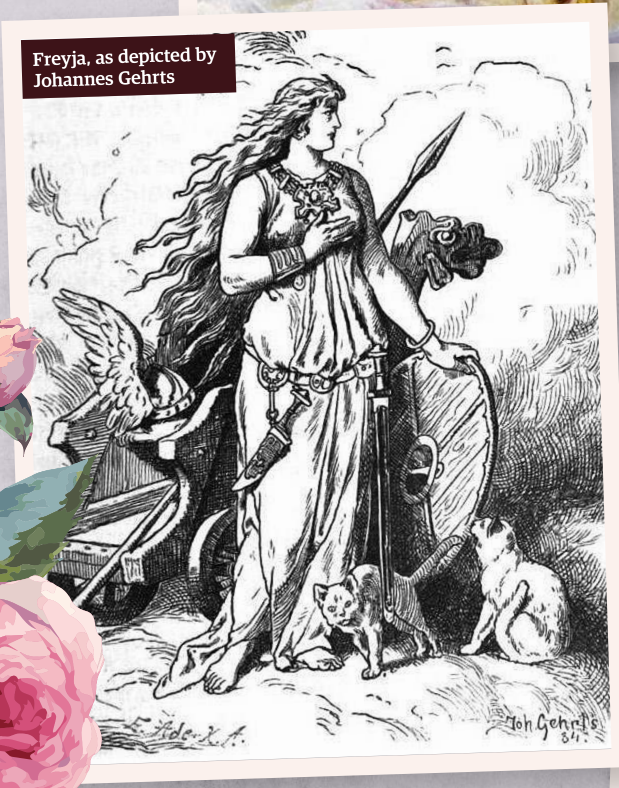
Regardless of her greater freedom in terms of marriage, a Norse woman's role was primarily to manage the household and the farm, particularly if her husband was away. Even in circumstances where a woman held some form of political power, perhaps because of her wealth, she was still responsible for the running of the home. That being said, it was also women who held absolute authority when it came to the household and so they still exercised influence in this way.

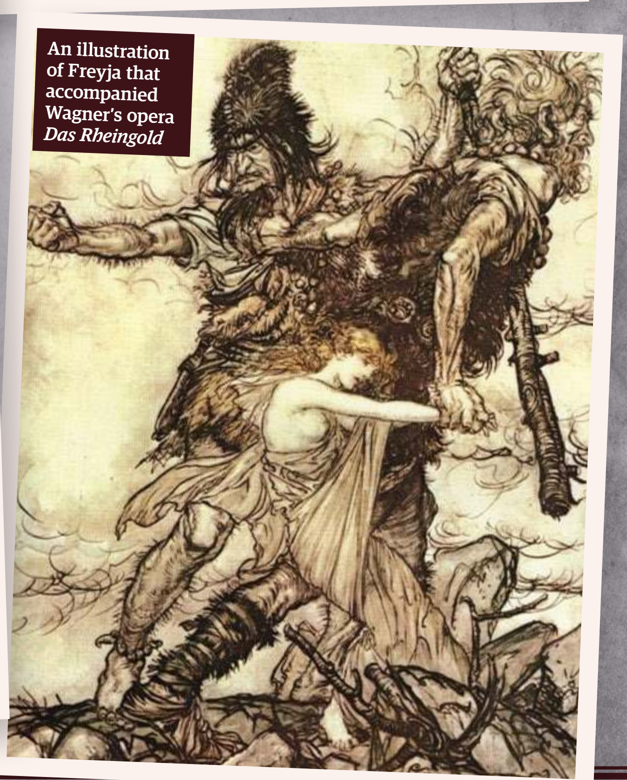
The situation was slightly different for widows, especially those of a high status. These women had the right to marry whoever they wished and could distribute their wealth however they saw fit. It was not uncommon for aristocratic widows to be able to support themselves as women held the right to inherit property and land. A woman who was mistress of her own property, or owned her own estate, was known as 'the lady of the house' in reference to Freyja, whose name literally meant 'the lady', in honour of her popularity.

Along with running the household, a woman was also expected to provide her husband with children. For this reason, sacrifices to Freyja formed part of the wedding ceremony in the hope that the goddess would bless the newlywed couple with fertility. The sacrifice was usually a sow, the animal associated with Freyja.

"WOMEN HELD THE RIGHT TO INHERIT PROPERTY"


Freyja had her own hall where those who died in battle could go


Freyja, as depicted by Johannes Gehrts


An illustration of Freyja that accompanied Wagner's opera *Das Rheingold*

SHIELD Maidens

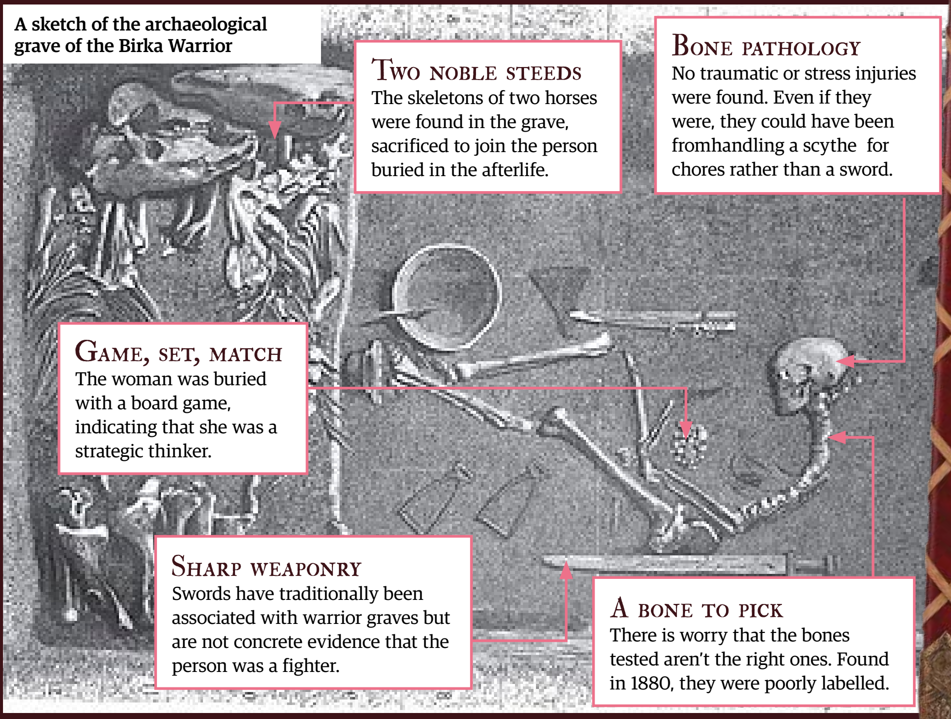
The debate surrounding the existence of female Viking warriors

The grave of the Birka Warrior, discovered in 1889, has always been held up as the pinnacle of the male Viking fighter. Buried alongside the remains were gifts of weapons, the skeletons of two horses and a board game. The latter may seem strange but it is an indicator that the deceased was a strategist and military leader.

The conclusion that the grave belonged to a high-ranking warrior has existed for almost 130 years but in recent months it has been proven that the skeleton is actually that of a female, not a male. Now the game has changed as the evidence calls into question a long-standing norm — that Viking warriors were all male.

The issue is that, despite this recent archaeological revelation, there is no concrete evidence that shield maidens actually existed. To begin with, the old Norse term 'vikingar' itself only applied to men and not to women, so technically there can be no such thing as a female Viking fighter. The majority of information concerning female warriors originates from the Icelandic sagas, which are factually incorrect.

The Medieval chronicler Adam of Bremen spoke of "war-like" women in northern Sweden and Grammaticus mentioned shield maidens, but neither elaborated further. Then again, there are many cultural references to shield maidens in Viking iconography as well as literature, which may one day prove their true existence.



A sketch of the archaeological grave of the Birka Warrior

Two noble steeds
The skeletons of two horses were found in the grave, sacrificed to join the person buried in the afterlife.

Bone pathology
No traumatic or stress injuries were found. Even if they were, they could have been fromhandling a scythe for chores rather than a sword.

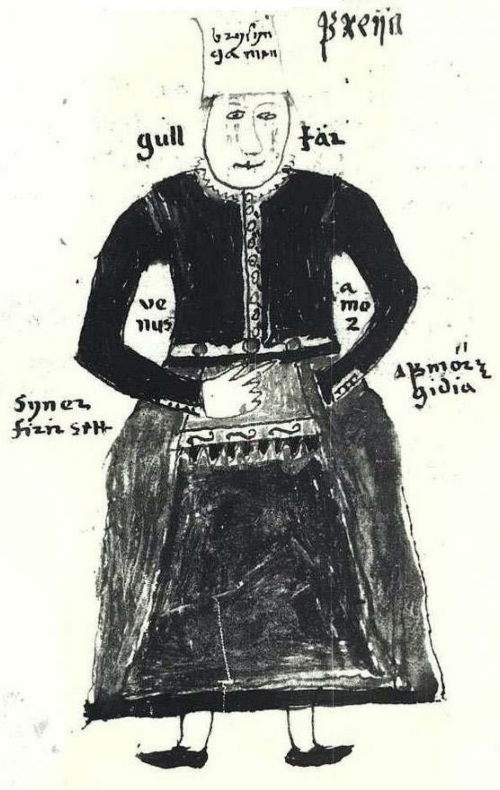
Game, set, match
The woman was buried with a board game, indicating that she was a strategic thinker.

Sharp weaponry
Swords have traditionally been associated with warrior graves but are not concrete evidence that the person was a fighter.

A bone to pick
There is worry that the bones tested aren't the right ones. Found in 1880, they were poorly labelled.

A Viking pendant representing Freyja

A hand-drawn illustration of Freyja from a 17th-century Icelandic manuscript



She would also be called upon during childbirth, which was a dangerous and uncertain experience for Norse women. It was hoped that she would protect the mother and child, ensuring that the birth would go smoothly. As Freyja was known for her unbridled sexuality, it is unsurprising that she was worshipped for her role in fertility. At one point, it brought her into conflict with Thor's brother, Loki, after he accused her of wanton and incestuous behaviour in Lokasenna, one of the poems from the *Poetic Edda*.

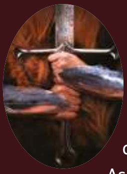
Such faith was held in Freyja that women are believed to have taken part in numerous fertility rituals dedicated to her, which managed to survive even after the adoption of Christianity. It is really difficult to get to grips with the process of pagan worship, thanks to the lack of contemporary sources that are available today. Indeed there are the sagas where a large proportion of the information regarding Norse mythology derives from, but they were composed in the 13th century, some 200 years after the conversion to Christianity, and for the most part are inaccurate.

This also creates another problem, as the men who wrote the sagas typically failed to pay much attention to the subject of female worship — so how do we know that Norse women continued to worship Freyja after the decline in paganism? Well, there are a number of places, particularly in Sweden, which we know have names derived from or that are associated with Freyja. To choose names in honour of her is a testament to the goddess' continuing importance in Norse society and to Norse women as a deity of fertility.

Worship of Freyja was certainly at odds with Christianity. Not only was she a lingering reminder of paganism, but also her sexually vivacious reputation went against the Christian ideal of a chaste woman. Young lovers would call upon her

FAMOUS NORSE Women

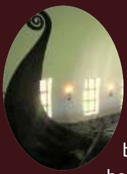
Discover five famous women from the Viking Age



AUD THE DEEP-MINDED

Queen of Dublin

After the deaths of her husband, the Norse king of Dublin, and her son, Aud had her own ship constructed and she left the British Isles for Iceland. As a widow with control over her own resources, she provided land for the slaves that had accompanied her, whom she then turned into freedmen. She is often credited with introducing Christianity to Iceland.



THE OSEBERG WOMAN

Queen

The remains of two women, one in her 50s and one in her 20s, were discovered inside the Oseberg burial ship, Norway. The richest Viking burial to be uncovered, it implies that one of the women was extremely wealthy and powerful. It has been suggested that this person could be Queen Åsa of Agder, who is associated with Oseberg.

GUÐRÚN ÓSVÍFURSDÓTTIR

Literary character

Guðrún is a celebrated and beautiful fictional character who features in the Icelandic *Laxdæla Saga*. She marries four times, divorcing her first husband after he wears a low-cut top she made for him just so that she could accuse him of wearing feminine clothing and separate from him. Her other three husbands tragically die and she becomes the first nun in Iceland.

THYRE

Queen of Denmark

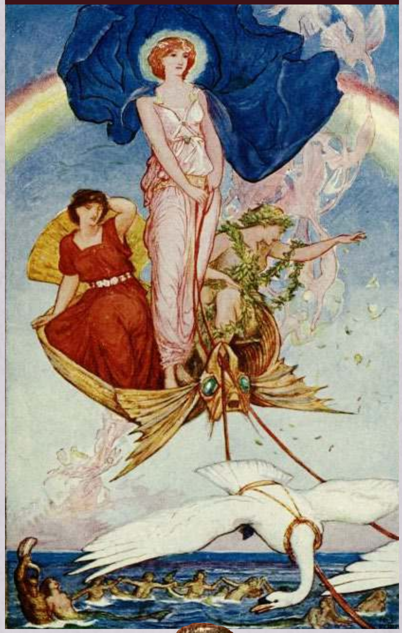
Queen Thyre was the wife of the first recognised king of Denmark, Gorm the Old, and the mother of Harald Bluetooth. While her husband was away at battle, Queen Thyre ruled in his place, earning the admiration of her people. According to legend, she was responsible for the building of the Danevirke fortification, although it predates her lifetime as it was actually started in the Nordic Iron Age.

LAGERTHA

Shield maiden

Lagertha's legendary, largely fictional, tale was depicted by 12th-century Danish historian Saxo Grammaticus. When the invading King Frø of Sweden killed the Norwegian King Siward, Siward's grandson Ragnar swore revenge. Lagertha, who had been forced into a brothel alongside Siward's female relatives by Frø, assisted Ragnar, impressing him with her courage and military skill.

Freyja apparently liked love poetry and was seen as a romantic deity



The left hand clasping the breast suggests that this could be Freyja

to support their affairs while women continued to look to her for matters on love and fertility.

Freyja was said to enjoy love poetry and, as a result, it soon became illegal under the new religion as Christians began to target the free-willed goddess and her popularity. For this reason, it is surprising to learn that the majority of Norse women actually embraced Christianity, despite its use of patriarchal oppression.

For Norse women, Christianity actually offered them some really appealing options that paganism could not. Most notably, it denounced infanticide – a practice that was used frequently among the Vikings, especially towards female infants.

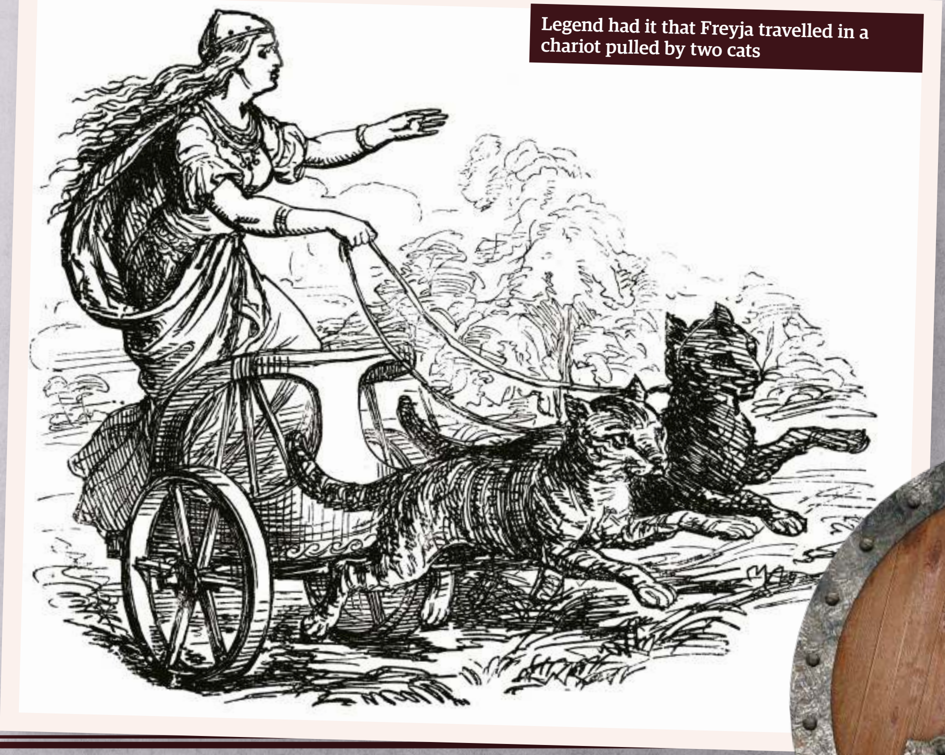
It has been suggested that this is the reason for the lack of female remains discovered in Scandinavia that date back to the Viking Age, with the exception of Birka, Sweden, where the number of female graves outnumbers the men's. For any Norse mother, the thought of a religion protecting her children from harm would have surely encouraged her conversion.

Another reason that women accepted Christianity so easily was its promise to give them a better afterlife. Valhalla, the hall of Odin, was not accessible to women after death as it was the destination for those who had died in battle.

There is no explicit evidence that clarifies where Norse women were expected to go once they had died. However, going by the graves of Norse women, who were usually buried with jewellery and household tools, it can be assumed that they did expect to enter the afterlife. It left them with one option: the realm of Hel.

Hel was a dark, dreary and depressing place, not exactly the dream place for women to spend their afterlife. It is hardly any wonder that women turned to Christianity in the hope that one day they would reach something better.

Speaking of the afterlife, it is interesting to note that although she was a deity of stereotypically



Legend had it that Freyja travelled in a chariot pulled by two cats

Freyja was worshipped as a fertility goddess

> “WOMEN CONTINUED TO LOOK TO HER FOR MATTERS ON LOVE AND FERTILITY”

feminine attributes, Freyja also played a key role as the goddess of war and death. As told in the Eddic poems, she got to choose half of the warriors who were slain in battle to enter her hall, Sessrúmnir, on the field of Fólkvangr, while Odin received the rest.

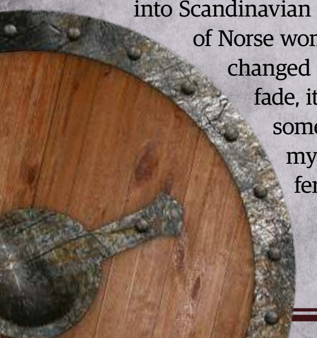
Judging by *Egil's Saga*, it has also been assumed that perhaps women believed they could also go to Freyja in the afterlife. Egil's daughter, Thorgerd, threatened to starve herself to death when her father refused to eat after the death of his son. She declared, “I have had no evening meal, nor will I do so until I join Freyja.” Does this imply that women could hope for an afterlife with the goddess? Unfortunately there is little information out there, besides *Egil's Saga*, to suggest that Norse women could go to Freyja after death.

Considering existing evidence, it is generally assumed that while those killed in battle went to the halls of Freyja and Odin, everyone else went to Hel. This leads to the conundrum of female warriors, also known as shield maidens.

Whether women actually held roles in the military continues to provoke heated debates, particularly when it comes down to recent archaeological findings, with arguments for and against. If women did indeed fight as warriors, it is certainly worth thinking about whether they would have been allowed to enter Freyja's hall, or even Odin's, on the basis of their profession rather than their sex.

Despite the advantages for women adopting Christianity, their devotion to Freyja continued, if the sagas are to be believed. It was said that out of all of the Norse gods, Freyja became the last living deity after the death of her brother. She continued to perform sacrificial ceremonies, increasing her popularity with her worshippers.

As Christianity tightened its grip across Scandinavia, Freyja gradually became assimilated into Scandinavian folklore. Although the role of Norse women in society and religion changed as paganism began to fade, it seems that there was still some focus on the traditional mythology and worship of the fertility goddess.



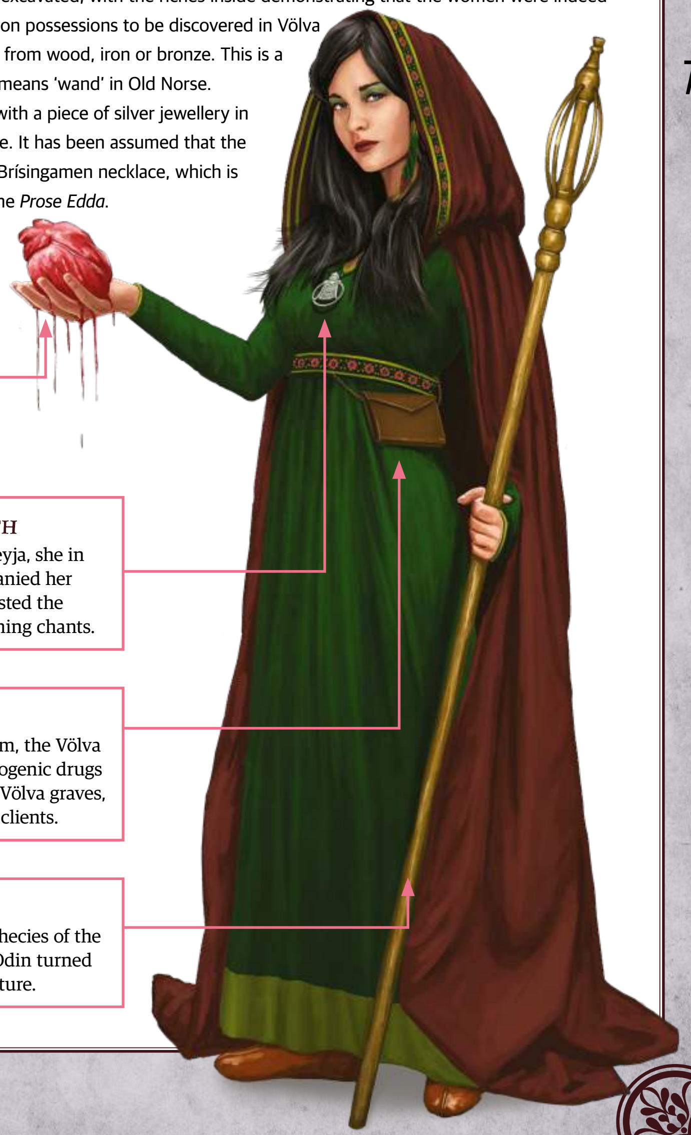
PROPHETS OF *Doom*

Freyja's roaming fortune tellers show her magical side

As a goddess of aeiðr, Freyja was seen as the archetype of the Völva, a Norse seer. Seiðr was a type of sorcery that could be used to see into the future and was practised by a number of Freya's followers, who travelled from place to place delivering their prophecies. Freyja herself was a representation for the wandering seiðr, as she supposedly roamed the earth in search for her husband, Oðr, who had vanished.

Völvas held a very prestigious position in society and were treated with great respect. Their status can be confirmed through the Völva graves that have been excavated, with the riches inside demonstrating that the women were indeed wealthy. Among some of the most common possessions to be discovered in Völva graves are magical staffs or wands, made from wood, iron or bronze. This is a reflection of the title 'Völva' itself, which means 'wand' in Old Norse.

In Sweden, a Völva was found buried with a piece of silver jewellery in the shape of a woman, wearing a necklace. It has been assumed that the necklace is a reference to Freyja and her Brísingamen necklace, which is stolen by Loki in the poem *Húsdrápa* in the *Prose Edda*.



EAT YOUR HEART OUT

A Völva would consume a meal made from the hearts of sacrificed animals before giving her predictions. She would be given pride of place in the home, usually on a high seat.

TO THE ENDS OF THE EARTH

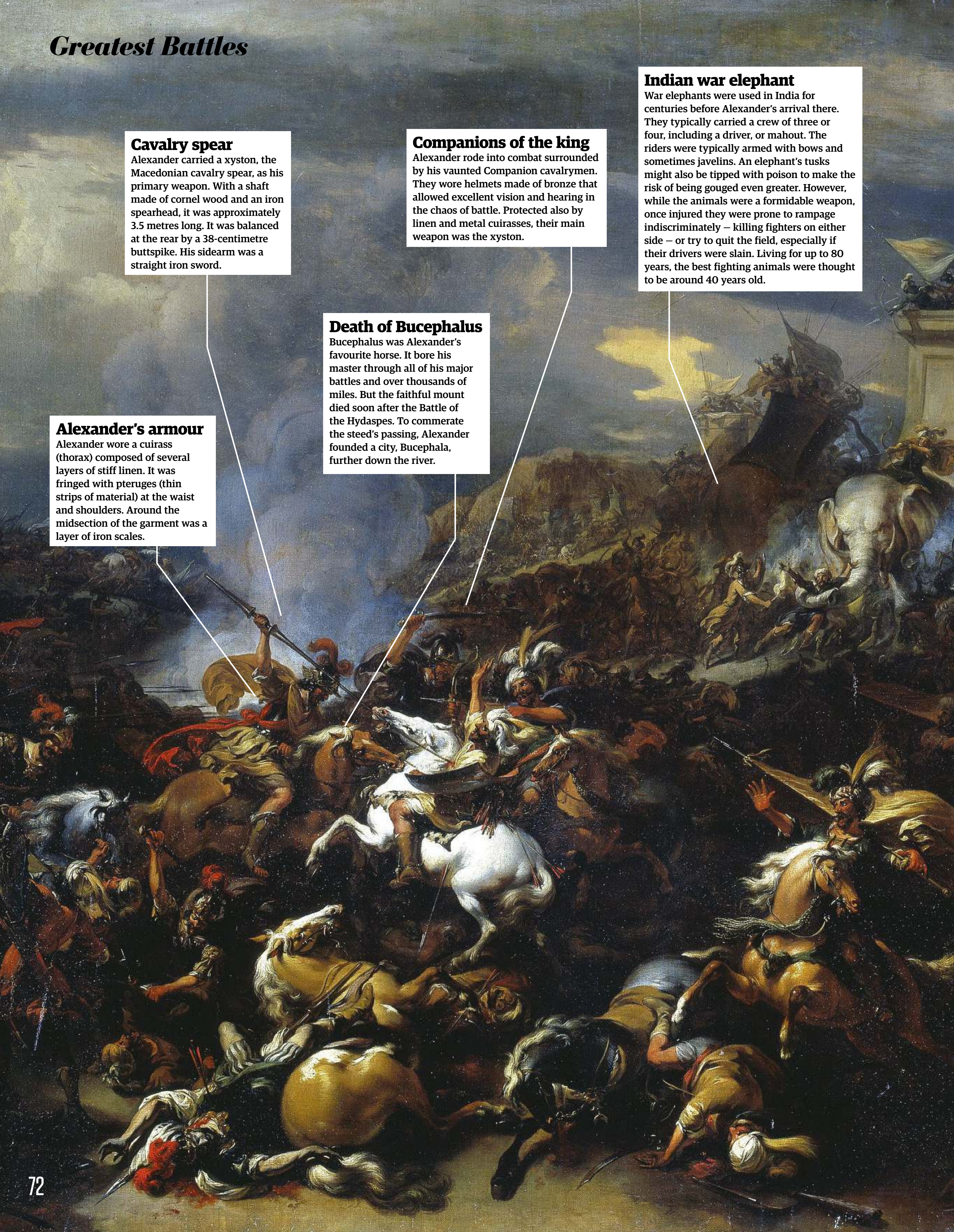
Just as the Völva was a devotee of Freyja, she in turn had young women who accompanied her wherever she went. They usually assisted the Völva with her predictions by performing chants.

LOOK AHEAD

Just as Freyja had a wanton reputatiom, the Völva were powerful seductresses. Hallucinogenic drugs such as cannabis have been found in Völva graves, which they may have used to seduce clients.

TRICK OR TREAT

So much faith was placed in the prophecies of the Völvas that it was said even the god Odin turned to them to offer predictions on the future.



Cavalry spear

Alexander carried a xyston, the Macedonian cavalry spear, as his primary weapon. With a shaft made of cornel wood and an iron spearhead, it was approximately 3.5 metres long. It was balanced at the rear by a 38-centimetre buttspike. His sidearm was a straight iron sword.

Companions of the king

Alexander rode into combat surrounded by his vaunted Companion cavalrymen. They wore helmets made of bronze that allowed excellent vision and hearing in the chaos of battle. Protected also by linen and metal cuirasses, their main weapon was the xyston.

Indian war elephant

War elephants were used in India for centuries before Alexander's arrival there. They typically carried a crew of three or four, including a driver, or mahout. The riders were typically armed with bows and sometimes javelins. An elephant's tusks might also be tipped with poison to make the risk of being gouged even greater. However, while the animals were a formidable weapon, once injured they were prone to rampage indiscriminately – killing fighters on either side – or try to quit the field, especially if their drivers were slain. Living for up to 80 years, the best fighting animals were thought to be around 40 years old.

Death of Bucephalus

Bucephalus was Alexander's favourite horse. It bore his master through all of his major battles and over thousands of miles. But the faithful mount died soon after the Battle of the Hydaspes. To commerate the steed's passing, Alexander founded a city, Bucephala, further down the river.

Alexander's armour

Alexander wore a cuirass (thorax) composed of several layers of stiff linen. It was fringed with pteruges (thin strips of material) at the waist and shoulders. Around the midsection of the garment was a layer of iron scales.

BATTLE OF THE HYDASPES

HYDASPES RIVER, NORTHWESTERN INDIA, MAY 326 BCE

Written by Marc DeSantis

Alexander III of Macedon, better known as Alexander the Great, built an empire that stretched from Greece in the west to Iran in the east in little more than a decade. In the course of doing this, he clashed with the mighty Persian Empire, itself one of the largest territories the world has ever seen. Alexander's famous battles with the Persian king Darius III, beginning with the Granicus River in 334 BCE, followed by Issus in 333 BCE and culminating in the final victory at Gaugamela in 331 BCE, are still studied by military tacticians today.

However, while Gaugamela is often held up as Alexander's greatest battle, he didn't stop there. Insisting that he should hold all of Persia's domains, he set about conquering its far-flung provinces. After spending 329-327 BCE taking Bactria and Sogdia, the Macedonian was poised to enforce his suzerainty over the last of Darius' lands: India. To Alexander, this was an almost mythical land, where the Olympian god Dionysus had once trod. It was here that the King of the Four Quarters of the World finally discoveored his limitations.

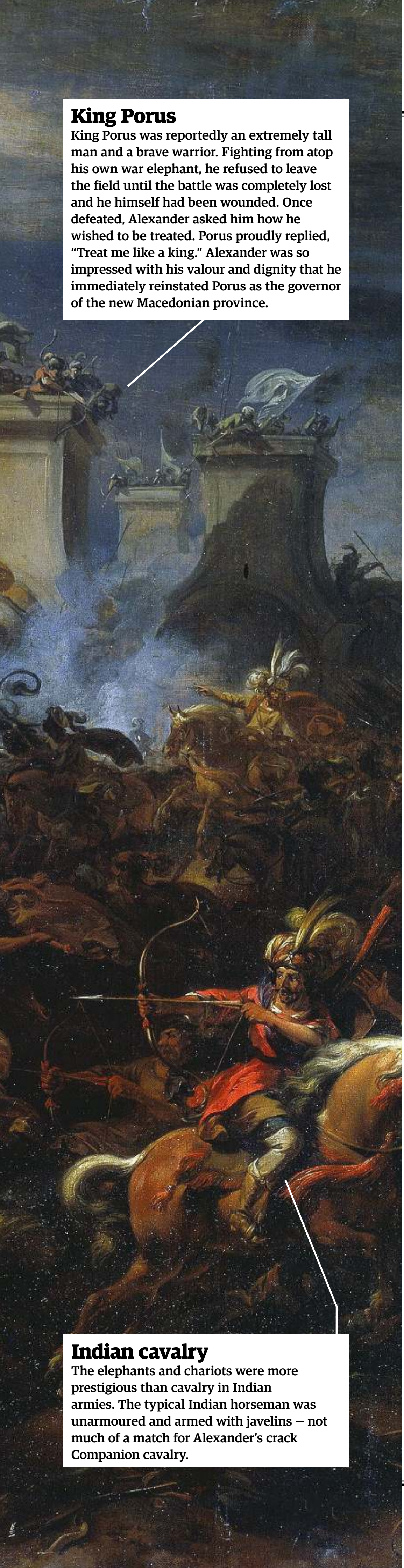
In 327 BCE, Alexander moved south down the Hindu Kush mountain range and continued on through Bajaur and Swat. He crossed the Indus River over a bridge of boats and quickly found a local ally in Taxiles of Taxila, who sought Alexander's aid against a rival Indian ruler, Porus, king of the Pauravas in today's Punjab region.

When Alexander attempted to traverse the wide and deep Hydaspes River (now known as the Jhelum), Porus lined up his army, including hundreds of armoured elephants, on the opposite bank. A contested river crossing is one of the most trying of military operations, ancient or modern. Alexander had to summon all of his famed tactical genius to overcome it.

Fought in May 326 BCE, the Hydaspes would be the first battle in which the Macedonians faced war elephants. Alexander had first encountered these animals at Gaugamela, where they had been part of Darius' army, but they had taken no part in the actual fighting. Here, they would prove to be frightening opponents. The Indians would also prove to be some of the fiercest combatants that Alexander ever encountered, and the Hydaspes itself was the most difficult of the four set-piece battles that he fought in his career.

Though Porus would be defeated, his nobility was such that Alexander allowed him to keep his throne. In addition, Porus' spirited showing at Hydaspes persuaded the Macedonian rank-and-file that going even deeper into India was a terrible idea. Beyond Porus' realm, they soon learned, lay a vast land filled with other larger and more powerful kingdoms with many more elephants.

Alexander's unhappy and exhausted soldiers had had enough. With their clothes and gear deteriorating in the hot and humid climate and nothing to look forward to except more bloodshed, they would go no further. Alexander was forced to give up his dreams of conquering India and turned his army around, headed towards home.

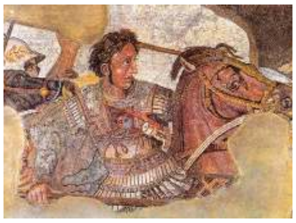


King Porus
King Porus was reportedly an extremely tall man and a brave warrior. Fighting from atop his own war elephant, he refused to leave the field until the battle was completely lost and he himself had been wounded. Once defeated, Alexander asked him how he wished to be treated. Porus proudly replied, "Treat me like a king." Alexander was so impressed with his valour and dignity that he immediately reinstated Porus as the governor of the new Macedonian province.

Indian cavalry
The elephants and chariots were more prestigious than cavalry in Indian armies. The typical Indian horseman was unarmoured and armed with javelins – not much of a match for Alexander's crack Companion cavalry.

Macedonians

INFANTRY 40,000
CAVALRY 7,000
INDIAN ALLIES 5,000



ALEXANDER THE GREAT

LEADER

Alexander was one of the finest generals of the ancient world and nearly invincible in battle. He died undefeated in 323 BCE.

Strengths Daring, quick-thinking, fearless and aggressive.

Weakness He often exposed himself to danger and had suffered several serious wounds by the time of the Hydaspes.

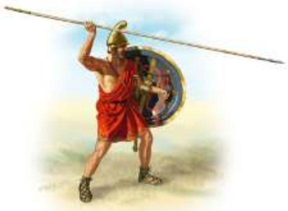
COMPANION CAVALRY

KEY UNIT

The elite cavalry troopers of the Macedonian army. They fought beside Alexander in battle and delivered the killing blow against the enemy.

Strengths They were brave, fast and talented horsemen.

Weakness Few in number.



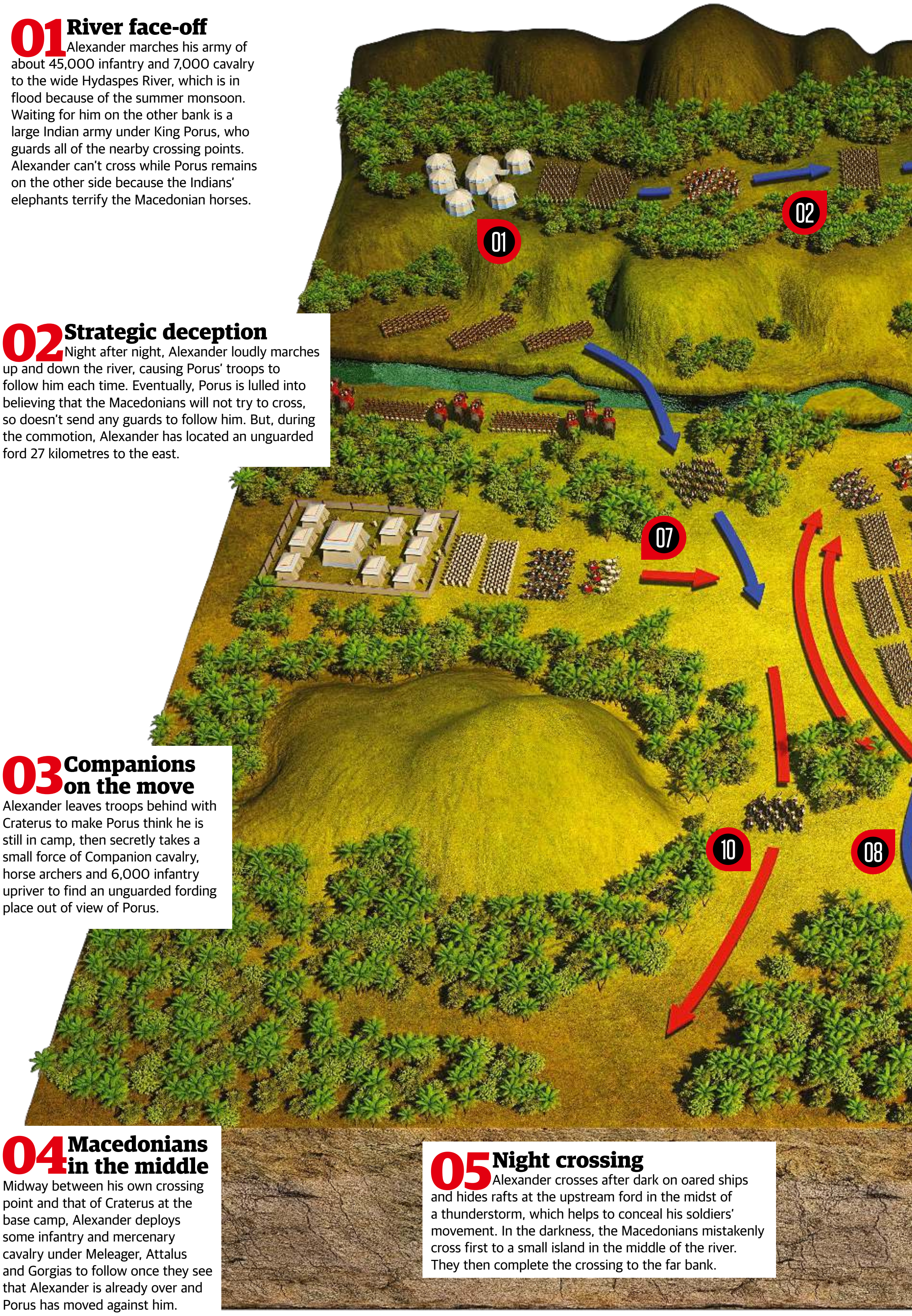
SARISSA

KEY WEAPON

The two-handed, 1.5-metre-long pike of the phalangite, Alexander's common infantryman.

Strengths The extreme length of the weapon allowed for five pike-heads to project beyond the front rank of the phalanx.

Weakness Unwieldy and of little use if the enemy broke through the hedge of pikes.



01 River face-off

Alexander marches his army of about 45,000 infantry and 7,000 cavalry to the wide Hydaspes River, which is in flood because of the summer monsoon. Waiting for him on the other bank is a large Indian army under King Porus, who guards all of the nearby crossing points. Alexander can't cross while Porus remains on the other side because the Indians' elephants terrify the Macedonian horses.

02 Strategic deception

Night after night, Alexander loudly marches up and down the river, causing Porus' troops to follow him each time. Eventually, Porus is lulled into believing that the Macedonians will not try to cross, so doesn't send any guards to follow him. But, during the commotion, Alexander has located an unguarded ford 27 kilometres to the east.

03 Companions on the move

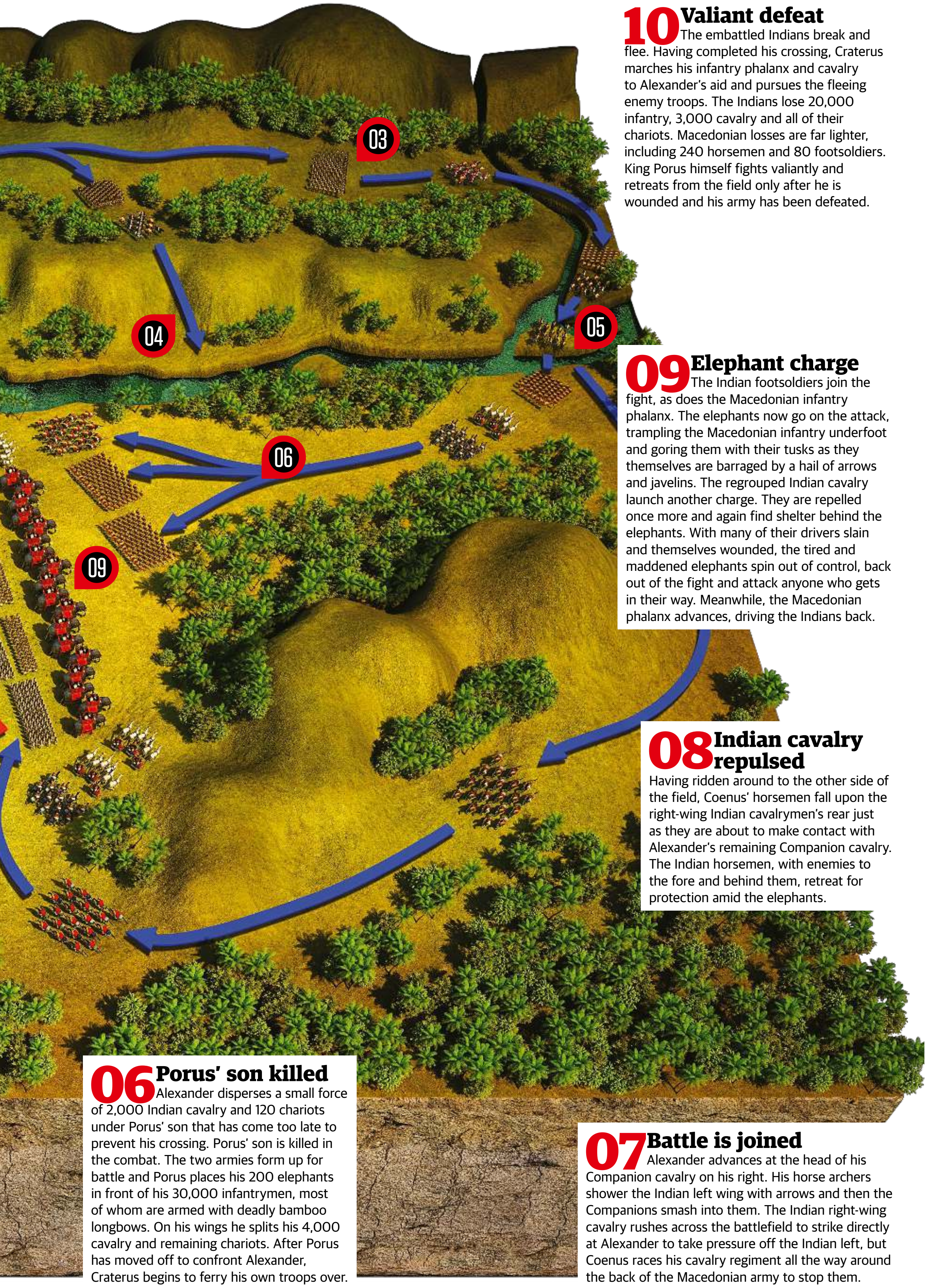
Alexander leaves troops behind with Craterus to make Porus think he is still in camp, then secretly takes a small force of Companion cavalry, horse archers and 6,000 infantry upriver to find an unguarded fording place out of view of Porus.

04 Macedonians in the middle

Midway between his own crossing point and that of Craterus at the base camp, Alexander deploys some infantry and mercenary cavalry under Meleager, Attalus and Gorgias to follow once they see that Alexander is already over and Porus has moved against him.

05 Night crossing

Alexander crosses after dark on oared ships and hides rafts at the upstream ford in the midst of a thunderstorm, which helps to conceal his soldiers' movement. In the darkness, the Macedonians mistakenly cross first to a small island in the middle of the river. They then complete the crossing to the far bank.



06 Porus' son killed

Alexander disperses a small force of 2,000 Indian cavalry and 120 chariots under Porus' son that has come too late to prevent his crossing. Porus' son is killed in the combat. The two armies form up for battle and Porus places his 200 elephants in front of his 30,000 infantrymen, most of whom are armed with deadly bamboo longbows. On his wings he splits his 4,000 cavalry and remaining chariots. After Porus has moved off to confront Alexander, Craterus begins to ferry his own troops over.

07 Battle is joined

Alexander advances at the head of his Companion cavalry on his right. His horse archers shower the Indian left wing with arrows and then the Companions smash into them. The Indian right-wing cavalry rushes across the battlefield to strike directly at Alexander to take pressure off the Indian left, but Coenus races his cavalry regiment all the way around the back of the Macedonian army to stop them.

08 Indian cavalry repulsed

Having ridden around to the other side of the field, Coenus' horsemen fall upon the right-wing Indian cavalrymen's rear just as they are about to make contact with Alexander's remaining Companion cavalry. The Indian horsemen, with enemies to the fore and behind them, retreat for protection amid the elephants.

09 Elephant charge

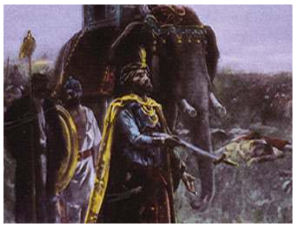
The Indian footsoldiers join the fight, as does the Macedonian infantry phalanx. The elephants now go on the attack, trampling the Macedonian infantry underfoot and goring them with their tusks as they themselves are barraged by a hail of arrows and javelins. The regrouped Indian cavalry launch another charge. They are repelled once more and again find shelter behind the elephants. With many of their drivers slain and themselves wounded, the tired and maddened elephants spin out of control, back out of the fight and attack anyone who gets in their way. Meanwhile, the Macedonian phalanx advances, driving the Indians back.

10 Valiant defeat

The embattled Indians break and flee. Having completed his crossing, Craterus marches his infantry phalanx and cavalry to Alexander's aid and pursues the fleeing enemy troops. The Indians lose 20,000 infantry, 3,000 cavalry and all of their chariots. Macedonian losses are far lighter, including 240 horsemen and 80 footsoldiers. King Porus himself fights valiantly and only retreats from the field after he is wounded and his army has been defeated.

Indians

INFANTRY	30,000
CAVALRY	4,000
CHARIOTS	420
ELEPHANTS	200



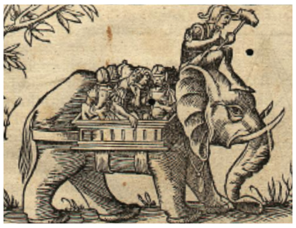
PORUS

LEADER

The king of the region lying between the Hydaspes and Acesines rivers was determined to prevent Alexander from invading his lands.

Strengths Extremely brave and a capable general.

Weakness Was lulled into believing that Alexander was not intent on crossing the Hydaspes soon.



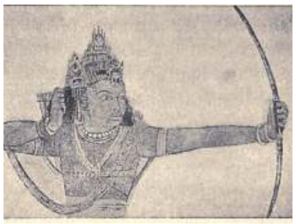
WAR ELEPHANT

KEY UNIT

Elephants were widely used in Indian warfare. Most crews of two to four men employed bows from atop the animals.

Strengths Gigantic, strong, terrifying and intelligent animals.

Weakness Would break off an attack when wounded or they lost their drivers.



LONGBOW

KEY WEAPON

The weapon of the common Indian infantryman was a bamboo longbow that launched 1.4-metre arrows.

Strengths Powerful, long-ranged and deadly.

Weakness The big bow was heavy and difficult to string.

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HERO OR VILLAIN?

Erwin Rommel

Should we consider the Desert Fox to be a self-serving Nazi whose military prowess was greatly exaggerated, or was he really the white knight of the Wehrmacht?

Written by Peter Price

Better known by his nickname the 'Desert Fox', Field Marshal Erwin Rommel is one of the more famous and polarising military commanders of World War II. Instantly recognisable by his trademark leather jacket and scarf, his command of the German Afrika Korps in their fight against General 'Monty' Montgomery and the 8th Army has seen his memory attain legendary status in the public eye.

A member of the armed forces under the leadership of a powerful eugenicist, he is often held up as one of the few chivalrous men in an otherwise toxic leadership. But do his character and actions reflect this, or has propaganda – both Axis and Allied – muddled our view of a power-hungry man who was willing to further the schemes of the Nazi regime by any means necessary?

Rommel came out of World War I a respected and highly decorated infantry commander, winning the Pour le Mérite, the highest Prussian military medal that could be awarded. This was the same honour bestowed on wartime celebrities like Manfred von Richthofen, better known as the Red Baron. With this honour, Rommel entered the interwar years with a high military celebrity status, making his ambitious climb through the ranks much easier.

From his experiences in World War I, Rommel published a military stratagem named *Infantry Attacks* in 1937, which gained him the attention of another Great War veteran, Adolf Hitler. The Führer was drawn to Rommel's daring and aggressive command style and their friendship would flourish.

Rommel was appointed commander of Hitler's security detachment during the opening months of war when German forces pushed into Poland. This close proximity to the Führer meant that the two became close, impressing each other and finding mutual respect. As dismissive as he was of other high-ranking Nazi officials, Rommel seems to have idolised Hitler and separated him from the rest of the party.

This mutual respect was also partly based on the fact that Rommel did not come from the Prussian

Defining moment

Ghost Division

In the opening months of WWII Rommel was given command of the 7th Panzer Division. Utilising 'Blitzkrieg', or lightning war, he cut deep into the French defences and the country fell in a matter of weeks. Rommel used his tanks to travel vast distances to surprise French defenders and his unit moved so quickly that both the Allied and Axis high commands couldn't pinpoint their location.

May – June 1940

Defining moment

Victory at Tobruk

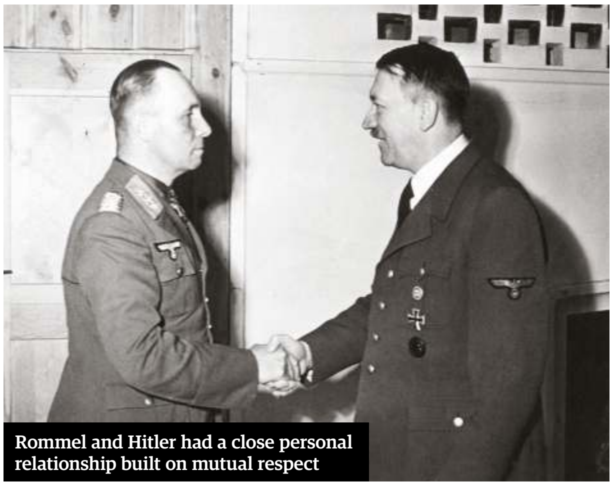
Another of Rommel's marked military achievements was capturing the stronghold of Tobruk. He was ordered to hold his position but seeing that he was outnumbered and had dwindling supplies, he knew he would be overrun. Deciding to seize the element of surprise, he led is forces on an attack through the open desert, catching the Allied forces by surprise. He was then able to capture Tobruk.

June 1941

> "This close proximity to the Führer meant that the two became close, impressing each other and finding mutual respect"

Rommel was given a grand state funeral as his death was officially ruled as an accident

Rommel observes enemy positions from his command post vehicle near Tobruk


Rommel and Hitler had a close personal relationship built on mutual respect

> "Rommel was known in both world wars to always be on the frontline"

elite like many other German generals, something Hitler, with his own background, could empathise with. This also led to friction between Rommel and other high-ranking officers, but the Desert Fox distrusted the officers directly under his command.

The German officer corps in World War II prized individual initiative and Rommel's micromanaging of each of his subordinates created resentment in the ranks. There are extreme examples of him directing individual machinegun fire, undermining the authority of the non-commissioned officers under his command. This hands-on approach did win him the support and admiration of the rank-and-file, however.

Not one to avoid the action, Rommel was known in both world wars to always be on the frontline. A saying that started during World War I and carried over to World War II and beyond went 'Where Rommel is, there is the front'. He also respected his opponents, singing the praises of both Patton and Monty.

Rommel's military record, his defining legacy, is filled with highs and lows. His exploits as an infantry commander in World War I served as a springboard to launch his career. Winning the Pour le Mérite was a very prestigious honour, with only just under 700 awarded throughout the entire conflict.

His command of the Ghost Division in the invasion of France in 1940 showed a firm grasp of tactics and a sense of initiative, but it has been criticised by military historians who point out that having an entire division vanish from your battle plans is never useful when devising an entire campaign. This streak of insubordination would become part and parcel of Rommel's tactics.

When facing down the superior Allied forces at Tobruk, he disobeyed orders to hold the line and went on the offensive. His stunning victory eased the ruffled feathers, but while the move was a bold one it was destined to fail. Outrunning his supply lines meant no fuel for his tanks or food for his men. To highlight the dire supply situation, the Afrika Korps' reliance on captured Allied equipment saw the vast majority of their motorised force being made up of captured vehicles. American-made Jeeps were a premium and were snatched up by the Germans whenever they were spotted.

In the end the field marshal didn't die on the battlefield. Instead, he was implicated in the failed 20 July Plot to kill Hitler. The extent to which Rommel was actually involved is disputed. On the day the bomb was detonated inside the Wolf's Lair (Hitler's Eastern Front headquarters) Rommel was otherwise engaged. He was injured in a car crash and was recovering in a French hospital.

However, several plotters named him as a conspirator during interrogation and he was specifically mentioned in several of the group's documents. While this was damning enough for the Nazis, it's not actually hard proof. His close friendship with the Führer would suggest that he would have had no part in it, while his wife maintained even after the war that he opposed killing Hitler, believing it would spark civil war. But by 1944 the Desert Fox's faith that the war could be won was shaken. He was also shrewd enough to know, had the plot succeeded, his popularity would have made him indispensable to stabilisation of the country after Hitler's death.

Defining moment

The Blue Max

Rommel's exploits in the First World War are often forgotten in the wake of actions in the second. Leading his battalion against the Italians in the Alps, Rommel and his small group of 150 soldiers made strategic use of the terrain to surprise and captured 10,000 Italians. This move, along with the fact that he only lost six of his men in the process, earned him one of Prussia's highest awards, the Pour le Mérite, or 'Blue Max'.

October 1917

Rommel was appointed commander of the German Afrika Korps and was posted in Africa from 1941 to 1943

© Getty Images

On 14 October 1944 Rommel was given the choice of a public trial or committing suicide. If he spared the state the controversy of putting a military celebrity on trial for treason, his family would be safe. The soldier took the cyanide pill.

However, the Desert Fox's lived on. After the war the shattered remains of the German army needed someone to rally around. As Rommel had fought against famous generals like Montgomery, Eisenhower and Patton, but was not linked to any high-profile atrocities, he was perfect. He could be held up as a German commander who fought a 'clean' war; a chivalric opponent with no innocent blood on his hands. He had died saving his family and no posthumous charges were brought against him at the Nuremberg Trials.

Bringing his military failings into focus would diminish the image of the Allied commanders who had fought against him. He had been involved in many of the same theatres as them, especially in North Africa and western France, and this image of the Desert Fox as a highly skilled opponent was a perfect fit for propaganda – if you beat him, you must have been the best.

His reputation in wartime was buffed by people like Winston Churchill, who said in one of his speeches to the House of Commons, "We have a very daring and skilful opponent against us… and, may I say across the havoc of war, a great general."

Rommel was a complex character. On the one hand he was seen as an honourable enemy who was a far cry from other German figures and units linked to atrocities being committed across Europe.

There is evidence of Rommel being in contact with Einsatzgruppen Africa for them to start conducting operations in North Africa, but thankfully this never came to be when German forces were pushed out. This, coupled with the fact he used Jewish slave labour to construct defences, muddies the water of the 'war without hate', as the North African campaign has become known. He was also a close personal friend of Hitler and actively tried to further the aims of a regime hellbent on wiping out entire peoples from the face of the Earth.

The fact that Rommel was mostly deployed to second-rate theatres, often with depleted or undersupplied forces, highlights both his military capabilities and shortcomings. While he was able to achieve victories by using aggressive tactics against stronger enemies, he also ignored his superiors and often outran his supply lines, meaning his attacks ground to a halt. Tanks and other vehicles cannot run without fuel, men cannot fight without food, and guns are useless without ammunition.

Praise from Allied leaders can do little to change the fact that Rommel lost in North Africa and categorically failed to stop the Allies gaining a foothold in France in Operation Overlord.

Defining moment

The Atlantic Wall

After his defeat in North Africa, Rommel was sent to shore up the defences of the Atlantic Wall, a system of coastal defences made by Nazi Germany, in preparation for the Allied invasion that the Germans knew was coming. Convinced that the invasion would be at Calais, Rommel's forces utterly failed to stop the Allies from gaining a foothold in Western Europe after the D-Day landings.

June 1944

Hero or villain?

HEROISM ●●●●●●●⑧○○

Never a man to shirk the frontlines, Rommel always commanded and led from the front, exposing himself to the same dangers as his men, earning their admiration.

VILLAINY ●●●●●●⑦○○○

While not a card-carrying Nazi, he fought for a genocidal regime and was a friend of Hitler. He was also in contact with the SS and used slave labour to build defences.

LEGACY ●●●●●●●●⑨○

The Desert Fox is one of the most iconic military leaders of WWII and his image is now undergoing re-evaluation to reflect the changing political climate.

Was Erwin Rommel a hero or a villain? Get in touch and let us know what you think

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Time Traveller's Handbook

NAPOLEONIC EGYPT

Egypt, 1798-1801

Napoleon Bonaparte, still a general for Revolutionary France but with one eye on seizing power, has invaded Egypt. His intention was to establish a colony and disrupt British trade with India. Unfortunately, the Egyptians have not thanked him for liberating their country from the Ottoman Empire as he had hoped. In fact, they are instead resisting him quite vigorously. But since the British Navy destroyed his fleet at Aboukir a few months ago, he can't retreat or expect any reinforcements. This conquest is doomed to fail but will kick-start the serious study of the land of the pharaohs.

Fancying himself a modern-day Alexander the Great, Napoleon handpicked 150 scientists, artists and engineers – collectively known as 'the savants' – to join his 55,000 troops. Instructed to document the ancient civilisation in unprecedented details, their heavily publicised results will inspire a European fascination with Egyptology.

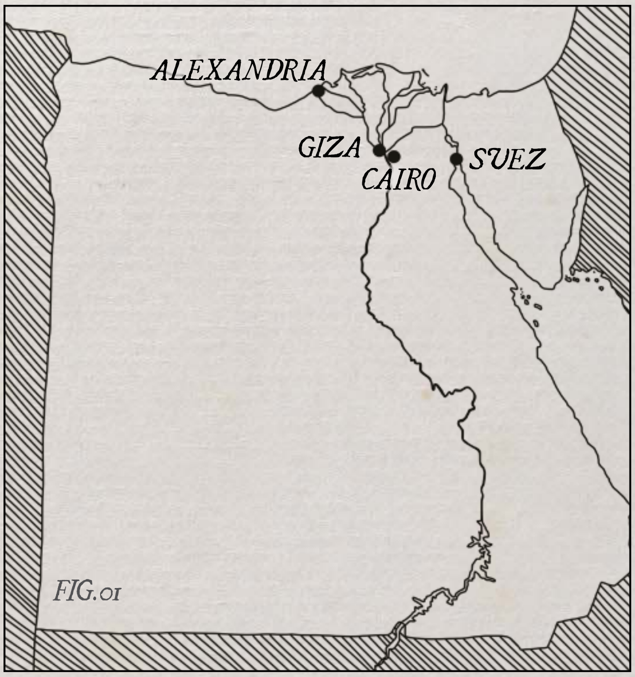


FIG.01

WHERE TO STAY

Upper Egypt is under the control of the insurgent Mamelukes, so Cairo is probably the safest place to stay. Napoleon has attempted to 'civilise' the city, adding a botanical garden, library and a public health service, but be careful not to align yourself too closely with the French.

On 22 October 1798 there will be a revolt in the city and the local inhabitants will kill Cairo's commander, General Dupuy, before going on to murder every Frenchman they can find. Napoleon will quickly crush the rebellion and restore order but it's probably best to be out of the city that week.

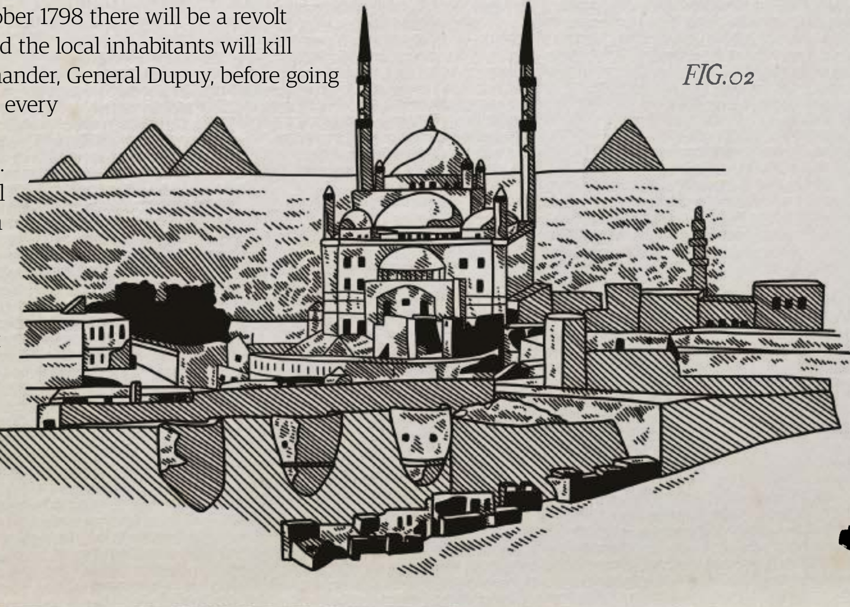


FIG.02

Dos & don'ts

☑ **Bring your own equipment.** All of Napoleon's scientific instruments were on his ship Le Patriote, which hit rocks off the Alexandria coast and sank 4 July 1798.

☑ **Form a square when attacked.** French infantry are able to hold off repeated cavalry charges using a square formation to protect their cannons and supplies.

☑ **Bring flea powder.** Bubonic plague is ravaging the French troops in the city of Jaffa and the disease is transmitted by flea bites.

☑ **Respect Islam.** Napoleon claims he worships Allah "more than the Mamelukes do" but this isn't really fooling anybody – least of all Murad Bey.

☒ **Be fooled by mirages.** The soldiers are often tricked by illusions of distant lakes but Napoleon's mathematician, Gaspard Monge, has shown that they are actually caused by refraction.

☒ **Share French maps.** The charts created on this expedition are so accurate that the French government has classified them as state secrets.

☒ **Panic when Napoleon leaves.** Although the Little Corporal abandoned Egypt in favour of seizing power in France in 1799, the British won't recapture Egypt until 1801.

☒ **Stand too close to General Kléber.** On 14 June 1800, the French commander will be stabbed to death by a Syrian student, and his chief engineer also wounded.

WHO TO BEFRIEND

Dominique Vivant Denon

This artist, writer and diplomat has somehow managed to survive the French Revolution, despite being a baron and a former friend of Louis XV. In Egypt, as one of Napoleon's savants, Denon is almost like an embedded war correspondent, travelling with the troops and making sketches of the ancient monuments, sometimes even when under fire from the enemy. The results will be published in his book *Travels in Lower and Upper Egypt* in 1802. Tag along with him to discover temples and ruins, including the Colossi of Memnon and the Kiosk of Trajan.

Extra tip:
Napoleon's troops begin marching each day at 1am, when it is still cool. If you are exploring the ruins with Denon during the day, make sure you still get an early night. You'll need to keep up with the relentless pace of the army as it pushes south in pursuit of Murad Bey.

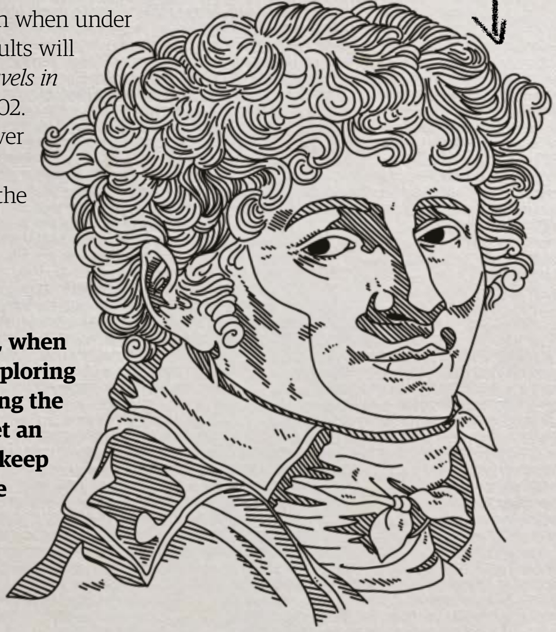


FIG.03

WHO TO AVOID

Murad Bey

Before the French arrived, Murad Bey effectively co-ruled Egypt as the head of the Mameluke Army. But Murad was outclassed by Napoleon's forces and defeated at the Battle of the Pyramids. Having retreated to Upper Egypt, he's waging a guerrilla war against Generals Desaix and Kléber. However, Murad is fickle and ambitious. In 1800, he will cut a deal with Kléber refusing to support British and Ottoman attempts to oust the French and even actively help suppress an uprising in Cairo in exchange for governing Upper Egypt.

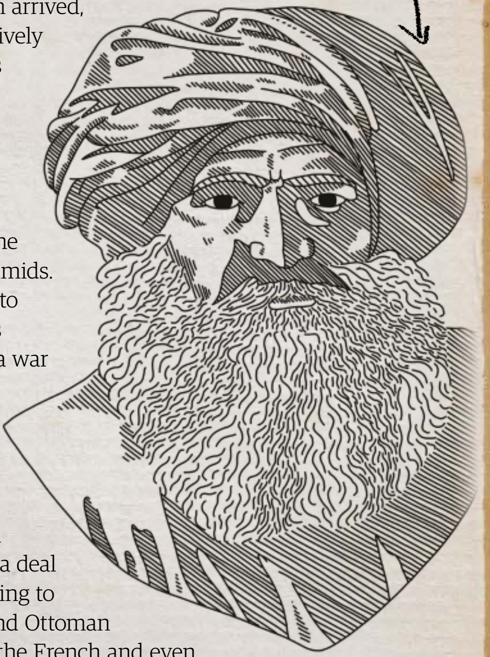


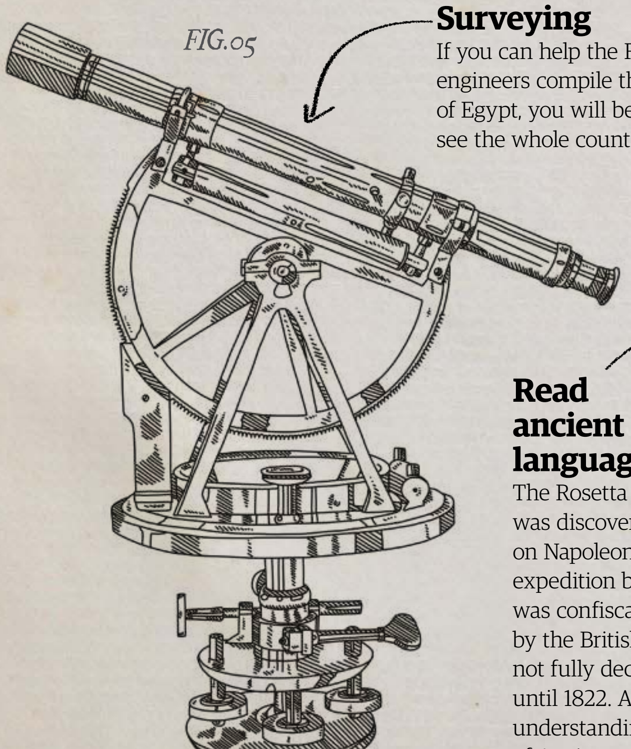
FIG.04

Helpful skills

With the right skills you can join Napoleon's contingent of 150 savants and explore Egypt's wonders

Surveying

If you can help the French engineers compile their maps of Egypt, you will be get to see the whole country.

FIG.05


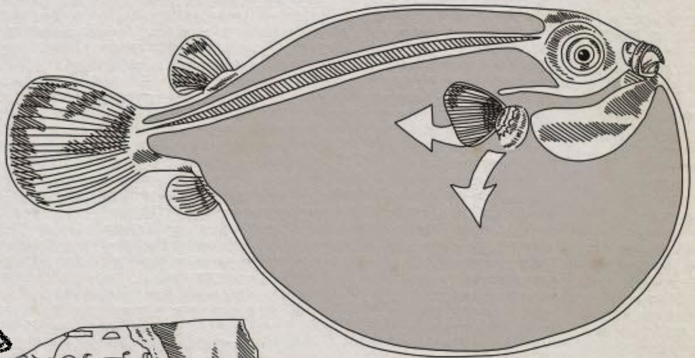
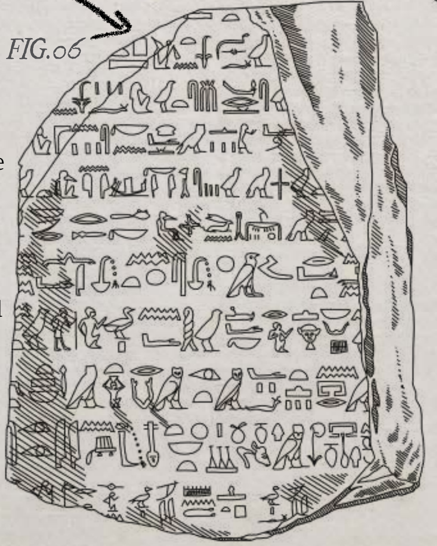


FIG.07

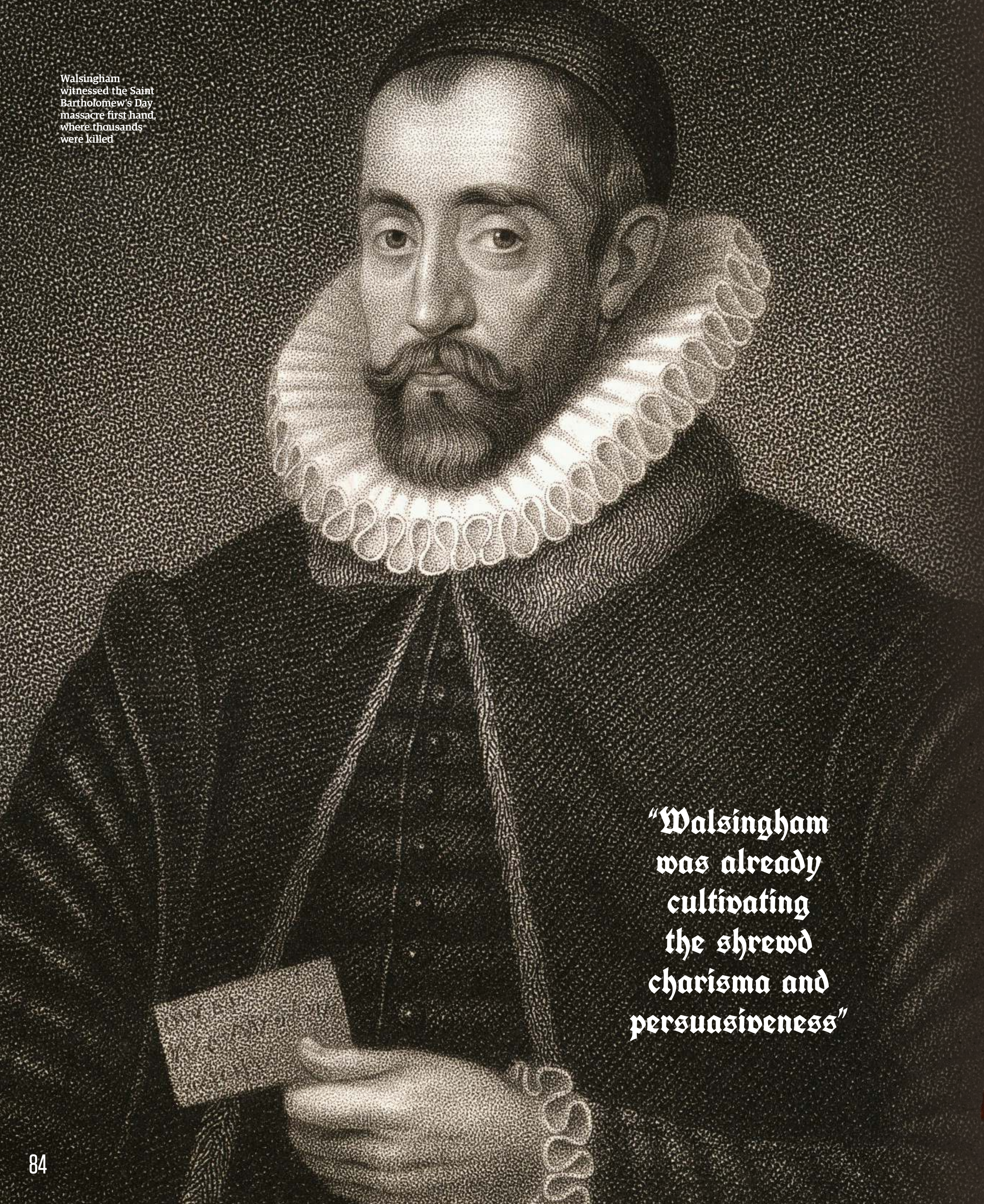
Read ancient languages

The Rosetta Stone was discovered on Napoleon's expedition but was confiscated by the British and not fully decoded until 1822. An understanding of Ancient Greek would help to speed up the process.

FIG.06


Zoology

As well as charting maps and recording ruins, Napoleon brought naturalists to collect and catalogue plants and animals, including the pufferfish and crocodiles that lived on the Nile, and the desert mongoose.



Walsingham witnessed the Saint Bartholomew's Day massacre first hand, where thousands were killed

"Walsingham was already cultivating the shrewd charisma and persuasiveness"

The Dark Arts of Elizabeth's Spymaster

The extreme lengths Sir Francis Walsingham was willing to go to protect the Virgin Queen from plotters and foreign powers

Written by Frances White

The Elizabethan era is often seen as a golden age for England. The Virgin Queen offered stability after the bloody reigns of her brother and sister, Edward VI and Mary I. This led to a flourishing of literarure, art and music, with Shakespeare performing regularly in London. England also established its first colony, following Sir Walter Raleigh's exploration of the New World. However, the truth is that 16th century England was the centre of a web of political intrigue. Elizabeth I was in constant danger of plots to overthrow her, with discontented Catholics who wanted to see an end to Protestant rule. These plotters were often in league with the most powerful nations in Europe, including Spain, France and the Papacy, all of whom had spies in the Queen's court.

Fortunately, England had its own man in the shadows, a pioneer that would set the standard for secret intelligence for centuries. But like so many spies living on the edge, this man and his agents would blur the line between right and wrong to protect queen and country.

Francis Walsingham was born into a well-connected family – one of many that who had found their wealth in the capital, then moved out and established themselves as landed gentry in the countryside. His father was a well-connected lawyer but he died when Francis was only two years old. His mother quickly remarried to Sir John Carey, a relation of Anne Boleyn through marriage. His strong familial links placed young Walsingham right in the centre of the most powerful players in England at the time.

Walsingham experienced a privileged education but like many staunch Protestants, he had to flee the country when the zealous Catholic Mary Tudor ascended the throne. During this period he lived in Italy, developing his language abilities and, more importantly, his people skills. This was the first time he had been able to meet and converse with all different kinds of people and he would later comment that it was important to take note of the "manners and dispositions" of people from all walks of life. Walsingham was already cultivating the shrewd charisma and persuasiveness that would see him become one of the most powerful men in England.

When Elizabeth was crowned in 1558, it was finally safe for Walsingham to return to the country. Only a few months later, he was elected as a member of parliament, though he had very little enthusiasm for this role despite holding it until his death. There was something he did have an interest in, however, and with Elizabeth's ascension the age of it had begun — espionage.

England's relationship with Spain had been good under Mary I — she had even attempted a marriage with King Philip — and there was talk of Elizabeth continuing this trend. However, this was not to be. Rather than strengthening the bond between the two nations, the countries drifted further apart. Of course, the very Catholic king of Spain was not overly fond of Elizabeth's Protestant allegiances and when Protestant rebellions sparked in Spanish-owned countries, England's calls for Protestant unity were not unheard by Philip. These tensions eventually mounted into Spanish ships attacking English privateers and any chance of an amicable alliance was lost.

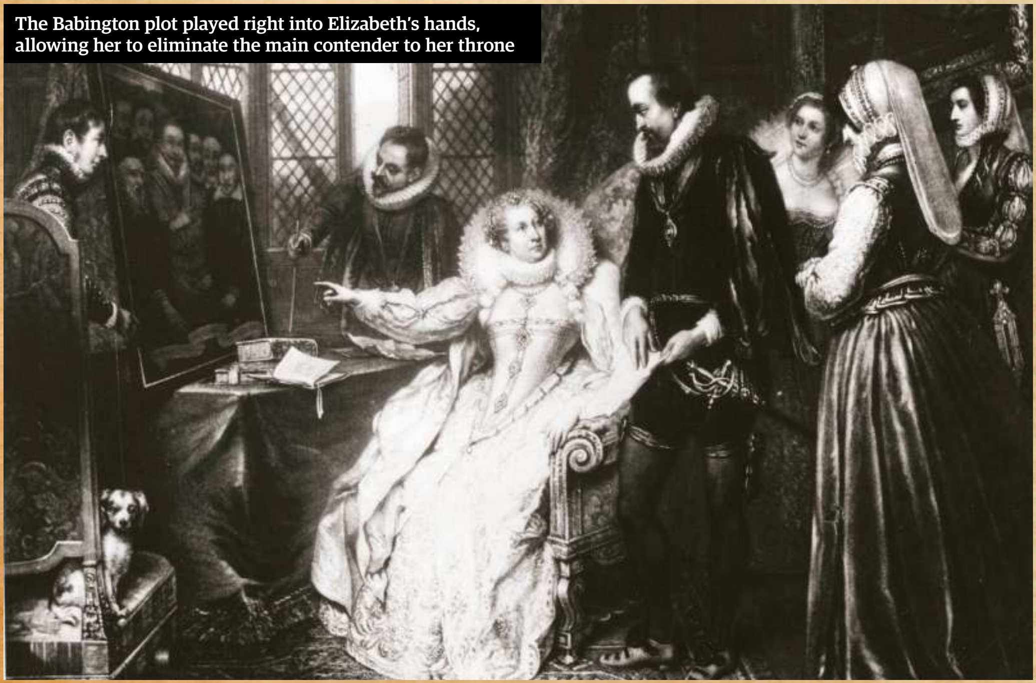
The king himself, Philip II, did little to help relations. He was an infamously suspicious man, untrusting even of his own faithful servants, and he often disgraced men and women loyal to him. He was dubbed the 'spider king' due to the many plots he would weave from the shadows.

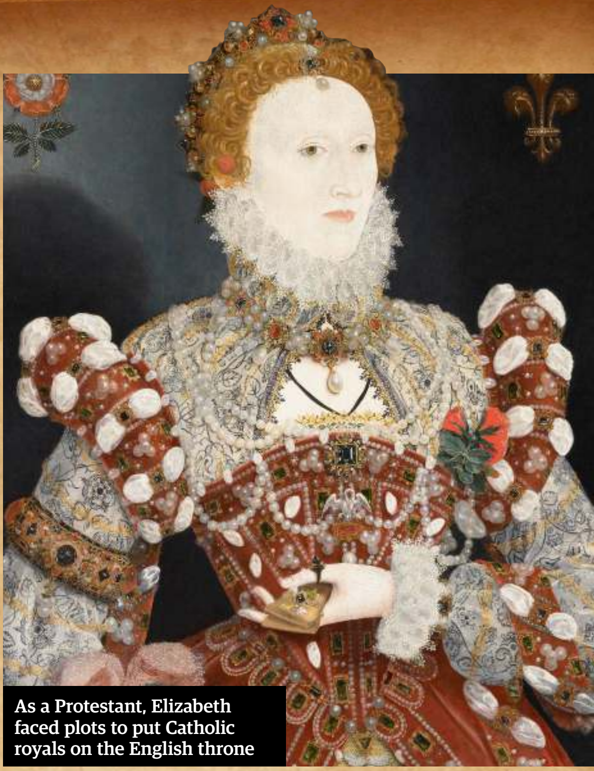
His own court historian wrote that "his smile and his dagger were very close." This caused bitter infighting within the Spanish court, which seeped into government and the country itself. This court of distrust and betrayal created the perfect atmosphere for foreign powers to take advantage — and England intended to expose and extort of all of the king's weaknesses.

Walsingham had already been plucked by William Cecil, Elizabeth's most trusted secretary, to perform 'confidential' tasks. He was a talented linguist and used his skills to spy on foreigners in London who may have borne ill will towards the monarch. Walsingham was not only good at this — his skills were unparalleled. He developed his own resources, recruiting talented men to work for him throughout the country, as well as in the major cities of Europe.

He was already hearing whispers of a plan by Spanish and French Catholics to place the Catholic Mary Stuart — also known as Mary, Queen of Scots — on the throne and he urged Cecil to take these rumours seriously, saying that "there is less danger in fearing too much than too little." This mantra would follow him throughout his career and see him foil some of the most dangerous conspiracies against a monarch in English history.

Walsingham's persuasion skills did not go unnoticed and between 1570 and 1573 he served as the ambassador to the French court. Here he tried to obtain a union between Elizabeth and the duke of Anjou, hoping that an alliance between the two old enemies would stop France from siding with Spain against England. However, he merely became convinced that an accord between the two nations with their dividing religious beliefs was now impossible, and that instead it is "less peril to live with them as enemies, than as friends."


The Babington plot played right into Elizabeth's hands, allowing her to eliminate the main contender to her throne


As a Protestant, Elizabeth faced plots to put Catholic royals on the English throne

Walsingham knew enemies — he knew how to spy on them and how to deal with them. He knew how to be distrustful. What he wasn't so good at was cultivating friendships. He was dry, dark, sallow and brutally honest with his companions. For many, Walsingham was a difficult pill to swallow and he even had fiery encounters with Elizabeth herself. However, all this was tolerated due to his supreme political and intelligence-gathering skills. Elizabeth knew she faced one of the greatest political schemers in Philip II and she needed her own weaver of plots in order to best him.

Walsingham returned to England towards the end of 1573 and was made a principal secretary, handling domestic and foreign affairs — but his attention was drawn to one person. He knew that all Catholic hope now rested on Mary Stuart and as long as she remained alive, schemes would rise up to put her on the throne. Walsingham was determined to squash every single one of them.

The spymaster concentrated on expanding his ring. Walsingham had eyes not only in every major county of England, but also France, Scotland, Spain, Italy, Turkey and even as far as North Africa. It is rumoured that at one time he had 53 agents in foreign courts and 18 more with undefined roles.

Almost all of these spies were Catholics willing to betray each other and he obtained his men by any means necessary. Walsingham used prison

> "He was a talented linguist and used his skills to spy on foreigners in London"

informants and double agents sourced through bribery and even threats. At home, men were trained to decipher correspondence, feigning handwriting and even in the art of repairing seals so nobody would ever know they had been tampered with.

It was the vastest and arguably most successful spy ring of the Elizabethan age and a model that would be replicated and expanded on into the 20th century. Walsingham was eventually given an annual stipend of £2,000 a year – a huge amount for the era – in order to fund his secret activities. He wasn't the only person employing and using spies at this time, far from it, but his ring was so extensive and deployed so expertly that no one else could hope to rival it.

Walsingham's efforts did not go unrewarded. In 1583, one of his spies in the French embassy in London caught wind of secret documents being passed through the embassy itself. The man suspected of being involved was Francis Throckmorton,and Walsingham placed him under increased surveillance. He was arrested six months later and on his person was a map of invasion ports and a list of Catholic supporters.

After some persuasive torture techniques, the details of the plan were confessed. Throckmorton was involved in a planned invasion of England by combined French and Spanish troops, as well as a planned assassination of the queen that would end by placing Mary Stuart on the throne in her place.

Not only was Throckmorton convicted of treason and executed, but the Spanish ambassador, found to be involved in the plot, was expelled from the country. The conspiracy revealed plainly that Spain was never going to be an ally to an England ruled by Elizabeth and diplomatic relations with the country were severed – no more Spanish ambassadors would be welcome in the London court. Spain was now officially an enemy.

The Throckmorton plot only served to increase Walsingham's concerns about growing support for Mary within England itself and he was right

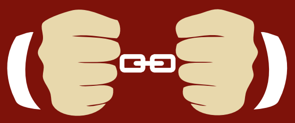
Crime and punishment

Elizabeth's top torturer had ways of making you talk

Richard Topcliffe was born into a very well connected family, with links to Anne Boleyn and Katherine Parr. When his father died young, he found himself in charge of a large and wealthy estate. A close companion of the queen, he was employed to extract 'confessions' through interrogation and often torture. Bashed by some as an inhumane beast capable of unimaginable cruelty, he would often attend the execution of his victims as a kind of master of ceremonies. Described as a "veteran in evil", Topcliffe made no attempts to hide his methods but instead was immensely proud of his work.

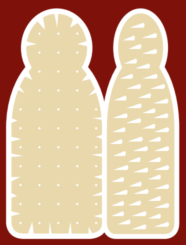
Manacles

Prisoners were hung by the wrists in metal manacles. This procedure would last for hours at a time without any break and could cause permanent internal injury and death.



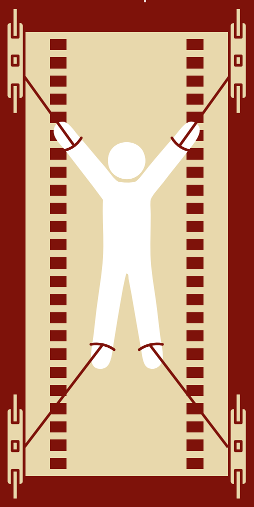
Torture machine

Somewhat of a mystery, Topcliffe was known to have his own torture chamber created in his London home. There he claimed to have a torture machine designed by himself that was apparently far more efficient at eliciting confessions.



The rack

An Elizabethan classic, a man was fastened to the contraption and very slowly and painfully stretched, causing bones to become dislocated. Topcliffe put his own spin on this by placing a large stone under the victim's spine.

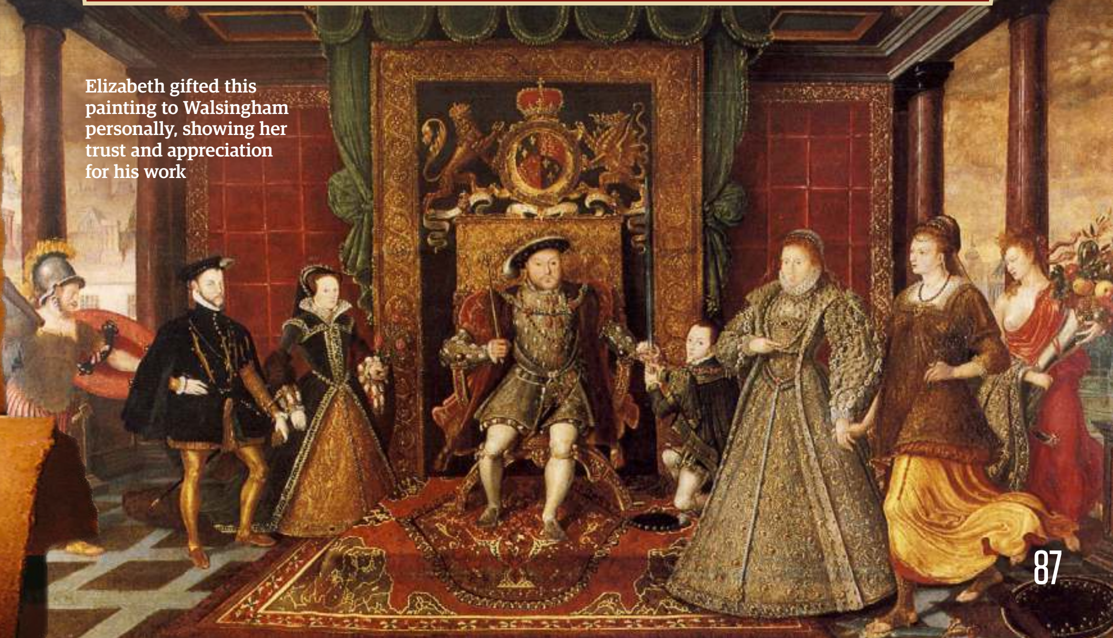


Mental torture

Not all of Topcliffe's abuse was physical – he would also talk to and scream at his victims to break their spirit along with their body. He would lie to and berate them until they no longer knew the truth from their dark prison cell.

Rape

Although not a legal form of torture, at least one confirmed case of rape occurred during Topcliffe's torture sessions. Either himself or one of his men raped Anne Bellamy to extract a suspect's location. She became pregnant and was forced to marry Topcliffe's servant to cover up the crime.



Elizabeth gifted this painting to Walsingham personally, showing her trust and appreciation for his work

The rogues gallery

Walsingham's men were spies who sold their honour and loyalty to the highest bidder

Giordano Bruno

An Italian friar, poet and philosopher, Bruno was close friends with Philip Sydney. While he was in London, it is believed that Walsingham had him deployed as a spy for the court in the French embassy. His information led to the reveal of a plot to dispose of Elizabeth and replace her with Mary Stuart.

Thomas Phelippes

Coming from humble origins as the son of a cloth merchant, Phelippes managed to climb the social ladder thanks to his amazing ability with languages. Speaking French, Italian, Spanish, Latin and German, his skills easily transferred to make him a talented cryptographer and he was snatched up by Walsingham to decipher enemy letters. His work proved that Mary Stuart was involved in a plot to oust Elizabeth, resulting in her execution.

Robert Poley

Poley's origins are swathed in mystery. In 1580, he appeared almost out of nowhere with a large amount of money. He was determined to find work as a spy and Walsingham ushered him into the network as a Catholic informer. He befriended the masterminds of the Babington plot and was monumental in its undoing.

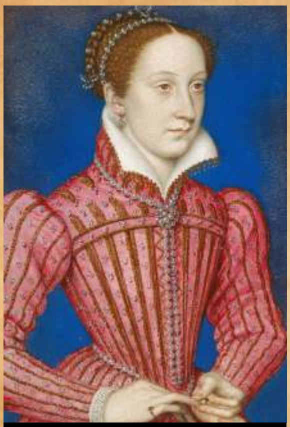
Gilbert Gifford

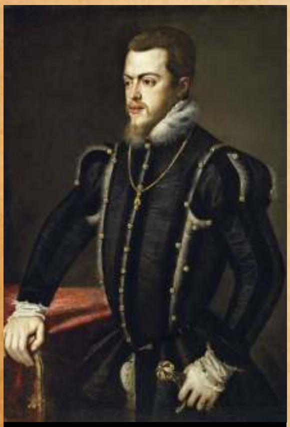
Born to a Catholic family, Gifford was ordained as a Catholic deacon. He was actually arrested by Walsingham but agreed to work for him as a double agent. Given the codename 'number four', he befriended Mary Stuart and secretly delivered coded letters from her to Walsingham. After the plot was revealed, he quickly fled to France and was ordained as a priest in Rheims. To this day, whether he was allied to Walsingham and Elizabeth or Mary remains a mystery.

Antony Standen

Known by the alias Pompero Pellegrini, Standen was another Catholic who had been convinced by Walsingham to act as a spy. Although he was settled in France, he was able to obtain crucial information about plans for the Spanish Armada for over two years, including a list of ships, supplies and men. Despite his service to England, Standen's devotion to the Catholic Church resulted in him being imprisoned in the Tower of London.

> "Philip the spider king had given up all pretence of allying with England"


Walsingham's intervention in the Babington plot led to the downfall and execution of Mary Stuart in 1587


Philip reigned over Spain at its most powerful but there were also five state bankruptcies

to be suspicious. Cut off from correspondence for nearly a year, Mary was eager to take advantage of a chance to send and receive her mail through beer barrels. Little did Mary know, her letters were falling right into the hands of Walsingham and his men, decoded and read in London, then sent on their way.

During this infiltration, messages were received from Anthony Babington, a wealthy Catholic gentleman who had recruited his own team with one aim in mind – assassinate Elizabeth. This society also had links with Europe and, of course, Spain. Before the plot, or the queen, could be executed, Walsingham tricked the men into revealing themselves and they were promptly rounded up and arrested. Many of the conspirators were tortured, most notably a priest, Ballard, who had to be carried to his execution in a chair as he was unable to walk.

However, the biggest success was that it directly implicated Mary herself in the scheme. Elizabeth finally had reason to act and Mary was arrested, sent to trial and found guilty. The queen then signed her own cousin's death warrant and she was beheaded. The Catholic threat, from within England at least, was, for now, eliminated and it was all thanks to Walsingham's eyes and ears across the nation.

Although Walsingham was successful with foiling plots from within the nation, the threat from outside was still very real. Philip the spider king had given up all pretence of allying with England and instead set about making sure Spain would be the most powerful nation in Europe.

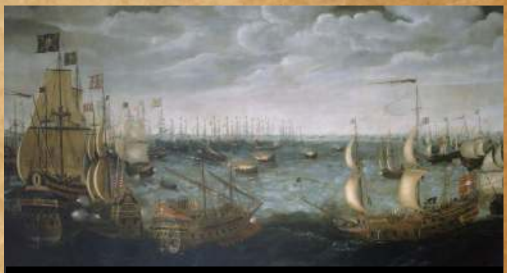
His most alarming action was his move to conquer Portugal by force, claiming the land was his as the recently deceased king was his childless nephew. Elizabeth, however fiery, did not wish to go to war with the nation but found herself with no option but to send troops to the Protestant rebels in the Netherlands, who were revolting against the Spanish king's hegemony. To Philip, this move was unacceptable – he believed that only by defeating England could he continue his quest for power and control over Europe.

Philip had a plan and it was a huge one. He would create an armada large and powerful enough to put a stop to England's meddling once and for all – and conquer it in the process. He did everything he could to gain Catholic support for this mission against the Protestant nation, although quite a few of these allies showed doubt if Philip's interests were truly to Catholicism or purely to Spain. However, for all intents and purposes, things were going to plan. As he rapidly built up his numbers, Philip secretly schemed the downfall of his most persistent thorns – Elizabeth and England.

England, however, was not oblivious to the spider king's plans. Walsingham had already been informed by his many spies, expertly placed in foreign courts, that Spain planned to launch an invasion of the country. He wasn't powerful enough to stop it completely but his intelligence meant he could certainly prepare the country and lessen the threat.

Dover Harbour was rebuilt so it was ready for an invasion and he urged his agents across the world to promote more aggressive strategies by attacking Spanish holdings in the hope that this would distract Spain, giving him more time to prepare. In particular, he ensured that Francis Drake's surprise raid on Cadiz would remain just that, which he did by feeding false information to the England ambassador in Paris.

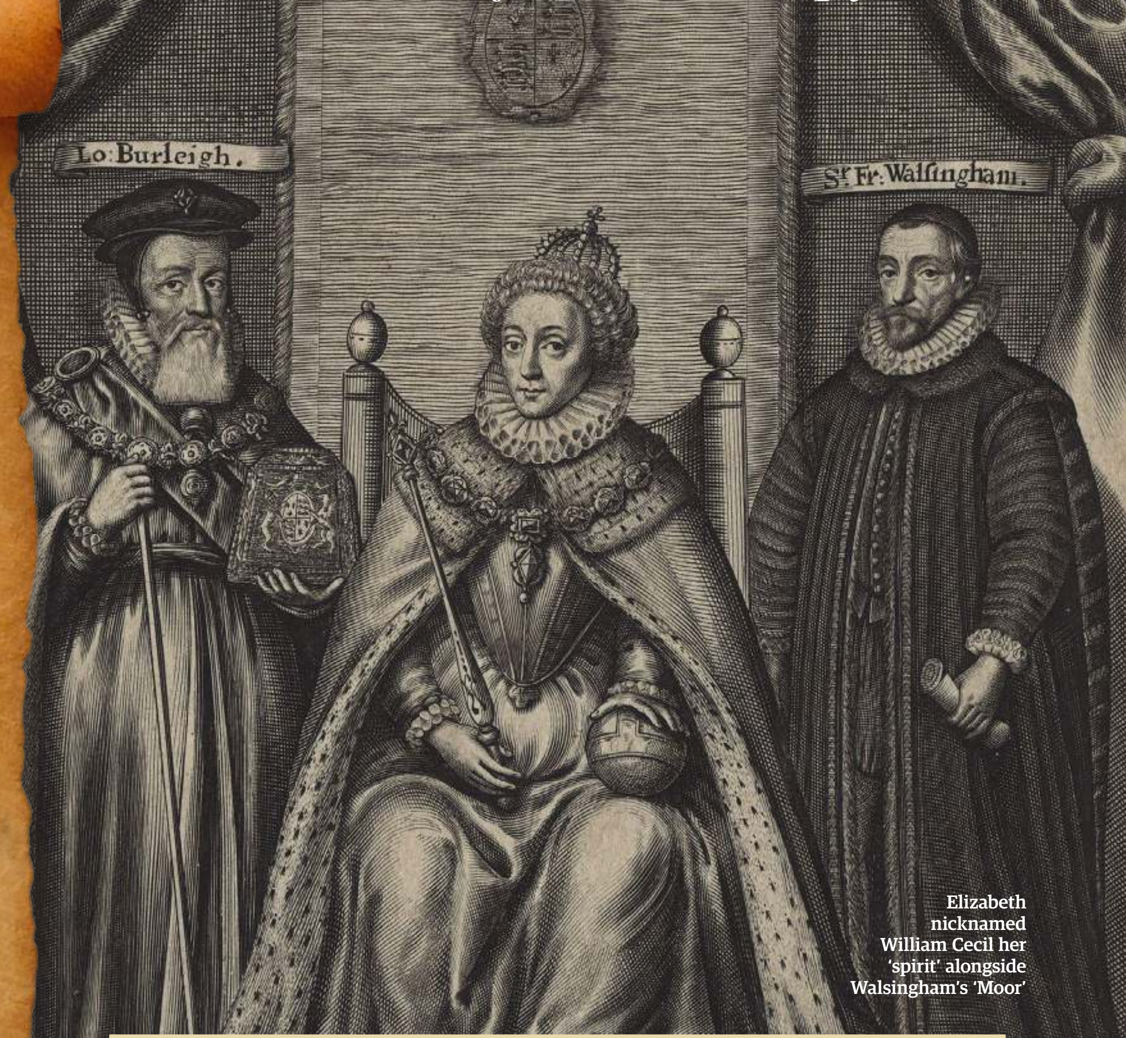
Walsingham already suspected the ambassador was working for the Spanish and, as usual, his hunch was correct. Drake's raid was a success – it wreaked havoc with the Spanish logistics and set the launch of the Armada back considerably.



During the Armada, Elizabeth proclaimed herself to "have the heart and stomach of a king – and of a king of England, too"

When the Armada finally set sail in 1588, Walsingham already knew how many ships to expect, how many men were on board and what they were carrying. Not only was the 'moor' given frequent updates from the English Navy, but he even raised his own land defence, should it get that far, with 260 men at his command.

When the Armada was vanquished in August 1588, the naval commander Lord Henry Seymour wrote to Walsingham, "You have fought more with your pen than many have in our English navy fought with their enemies." For now, at least, the Spanish threat was crushed but Philip would continue to set his sights on England for years to come. However, as long as Walsingham and his spies were listening in the shadows, Elizabeth would be one step ahead of the spider king's ploys.


Lo: Burleigh.
Sr Fr: Walsingham.

Elizabeth nicknamed William Cecil her 'spirit' alongside Walsingham's 'Moor'

The queen and her moor

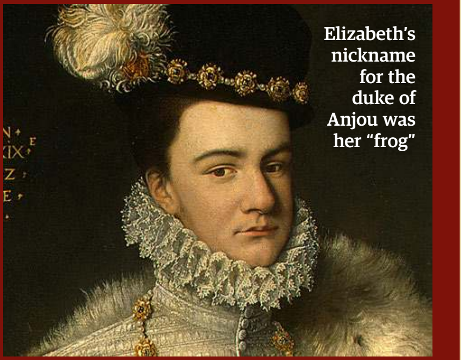
Despite the fact that Walsingham likely saved the queen's life countless times by thwarting conspiracies aimed to eliminate her, their relationship was complicated. It is no great secret that Elizabeth was a larger-than-life personality – loud, brash and outspoken – and she didn't mince her words. Although she famously never married, Elizabeth was particularly fond of men and her support structure was composed pretty much entirely of them. She liked men who cooed over her, and especially ones who said what she wanted to hear. Walsingham, however, was not one of them.

The two of them frequently disagreed on policy. Walsingham was very direct, honest and rather passionate about his opinions. For one, he was convinced that a marriage that Elizabeth sought between herself and Francis, the duke of Anjou, was not a wise idea. In fact, he opposed the union so adamantly that when he failed to secure it, Elizabeth furiously dismissed him from court for several months.

Despite these fiery encounters, Elizabeth was not a fool – she saw how talented and vital Walsingham was to her court and gave him role after role of pivotal responsibility in both domestic and foreign affairs, even trusting him to talk on her behalf with foreign ambassadors.

Elizabeth often mocked Walsingham's zealous beliefs and sober demeanour, even calling him a rank Puritan. But she did give him one of her nicknames, calling him her "moor" due to his dark appearance. The queen's nicknames, though often appearing derivative, were saved solely for those she was fondest of, so it is clear she had some affection for Walsingham.

Although their relationship may have been rocky, the queen valued him for his trustworthiness, honesty and council and even his dry humour. Over time, rather than fighting against him, Elizabeth accepted her spymaster for who he was – "her Moor [who] cannot change his colour."



Elizabeth's nickname for the duke of Anjou was her "frog"

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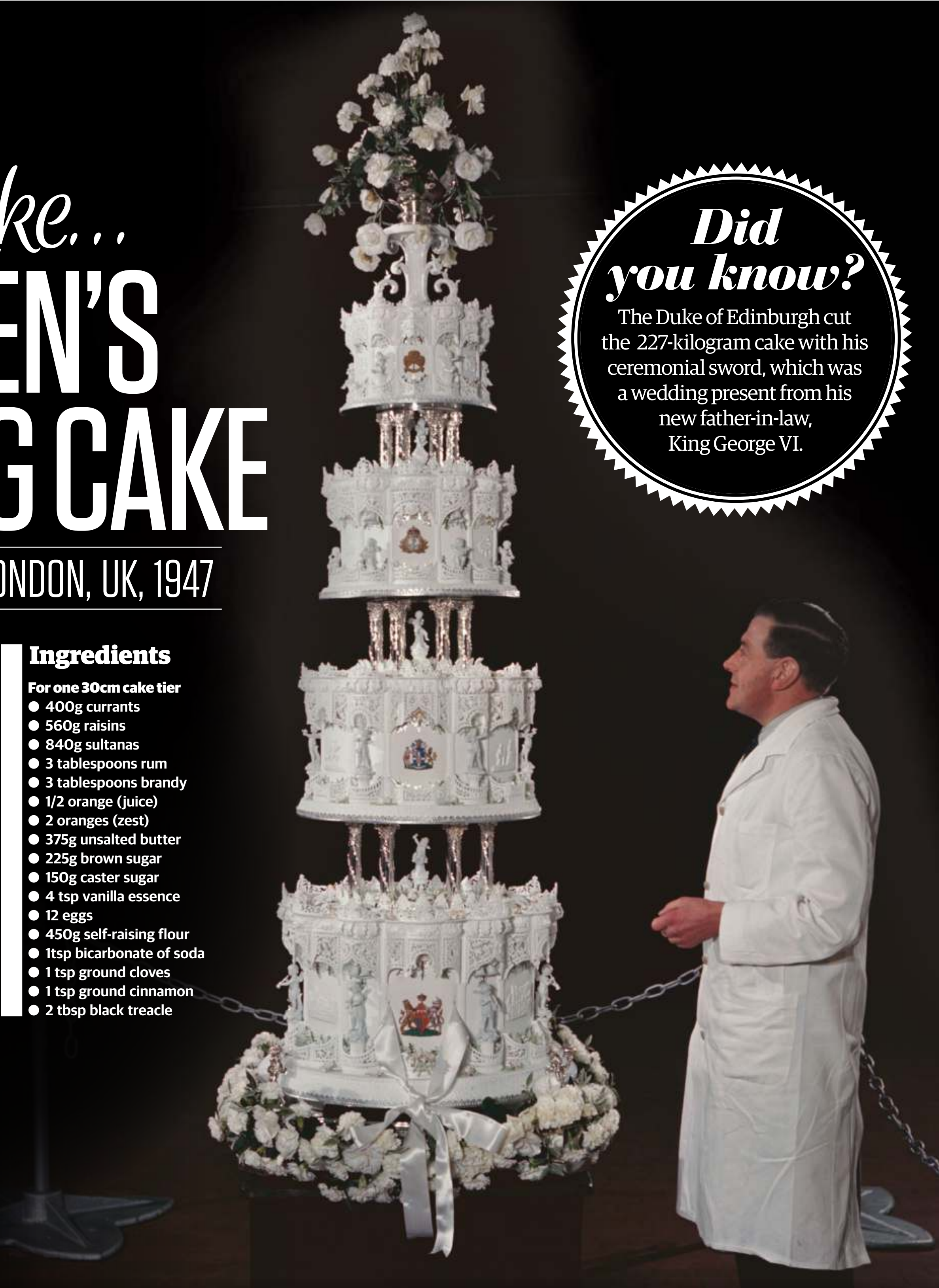
How to make…
THE QUEEN'S WEDDING CAKE

FIRST CLASS FRUITCAKE LONDON, UK, 1947



Did you know?

The Duke of Edinburgh cut the 227-kilogram cake with his ceremonial sword, which was a wedding present from his new father-in-law, King George VI.

Queen Elizabeth II and the Duke of Edinburgh mark their platinum wedding anniversary on 20 November. Their marriage at Westminster Abbey 70 years ago was followed by a reception at Buckingham Palace. Even in the opulent palace ballroom, the royal wedding cake stood out. Nine feet high, it was made up of four tiers of fruitcake, decorated with both families' coats-of-arms, the couple's monograms, sugar-iced figures depicting their favourite activities, and military insignias.

However, the towering treat was put together during a time of post-war austerity, when food rationing was still in force in Britain. So, to make the elaborate cake, Commonwealth nations gave ingredients as wedding gifts, including Demerara sugar from Trinidad, butter, almonds and frozen eggs from the Australian Girl Guides, and rum and brandy from South Africa. The following recipe is for a fruitcake similar to that which the royal couple would have enjoyed.

Ingredients

For one 30cm cake tier

- 400g currants
- 560g raisins
- 840g sultanas
- 3 tablespoons rum
- 3 tablespoons brandy
- 1/2 orange (juice)
- 2 oranges (zest)
- 375g unsalted butter
- 225g brown sugar
- 150g caster sugar
- 4 tsp vanilla essence
- 12 eggs
- 450g self-raising flour
- 1tsp bicarbonate of soda
- 1 tsp ground cloves
- 1 tsp ground cinnamon
- 2 tbsp black treacle

METHOD

01 Begin your royal wedding cake by mixing all of the dried fruit with generous measures of brandy and rum. Leave for at least 24 hours (or up to a week!) so that the fruit absorbs the liquid. Add the juice of 1/2 an orange at the end of the soaking time.

02 When it's time to start baking, being by setting your oven to 160ºC/325ºF. Then take a 30cm/12" round baking tin and double-line it with baking parchment on the inside as well as the outside of the tin. Make a small parchment lid to place on top, and set aside.

03 In a large bowl, beat your butter, sugars and vanilla essence together until light and fluffy and then beat in the orange zest.

04 Gradually whisk in the eggs, adding one at a time, until it's well combined and then in a separate bowl sift the flour, bicarbonate of soda and spices together.

05 Fold the wet ingredients and dry ingredients together, and then combine with the soaked fruit and treacle. Mix well to ensure everything is well combined.

06 Transfer your cake mix to your double-lined baking tin and smooth out the surface of the mixture. The layers of greaseproof paper will protect your cake from burning over the long cook time.

07 Bake the cake for around 4.5 hours, rotating a few times in the oven (to ensure an even bake) until a skewer comes out clean from the middle of the cake.

08 Leave it for two minutes before removing the cake from the tin, and then leave it to completely cool down on a wire rack.

09 To complete your royal wedding cake, you can repeat this recipe to bake multiple tiers. Thanks to the alcohol content the cake keeps very well, so you can focus on planning your elaborate sugar craft decoration and building a masterpiece fit for a princess.

© Getty Images

REVIEWS

All About History on the books, TV shows and films causing a stir in the history world

DISTANT MIRROR:
THE CALAMITOUS 14TH CENTURY

A century of warfare and disease in Europe

Author Barbara Tuchman **Publisher** Penguin Random House **Price** £13 **Released** Out now

For an author to attempt to tackle the best part of a century in one tome is a hugely ambitious endeavour. But to weave one's way through the blood-soaked carnage of the 14th century is another challenge entirely. Barbara Tuchman, a two-time Pulitzer Prize winner, stands up to the task in this gripping book.

Told largely through the eyes of Enguerrand de Coucy VII, a French nobleman blessed with a cool-headedness often lacking in so many of his contemporaries, this is a story of possibly the most forlorn century in human history.

A 634-page-long book may sound like a summit too high for some readers, but Tuchman somehow manages to frame a vast wealth of information around a fast-paced adventure of knights, plague, honour and treachery.

After superbly setting the scene and introducing her central protagonist, Tuchman goes on to assess the hostility that raged between King Edward III's England and the kingdom of France he so coveted. While the anticipated use of swords is detailed, it's the introduction of the longbow (that could stand at almost two metres) and, albeit subtly, the first use of a gun in European warfare, that immediately demand attention.

Tuchman then plunges straight into the devastation of the Black Death, explaining how it originated in China in 1346 before claiming almost 24 million lives across Asia. Europe then suffered the same fate, with Genoese ships first bringing the lethal plague to harbours in Sicily in 1347.

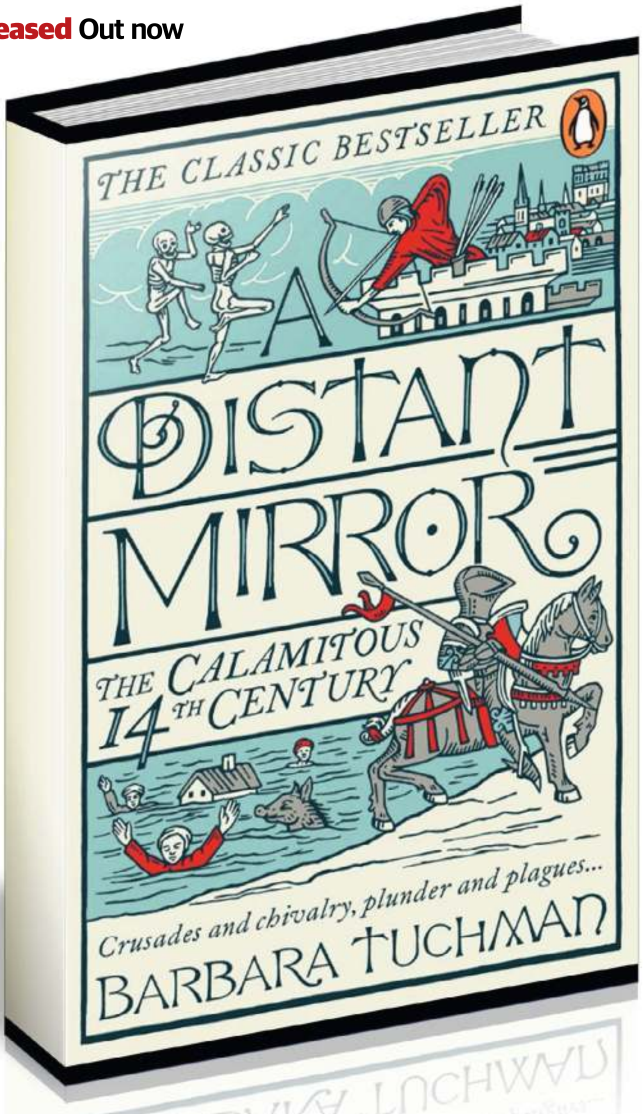
It would go on to ravage Europe on and off until 1353, killing, according to some sources, a third of the world. Its success was largely due to the fact that the disease came in two forms; one caused pus and blood-filled buboes (boils) and was spread by contact, while the other brought on a fever and a bout of coughing up blood, which helped it to spread via respiratory infection.

With one catastrophe behind it, Europe was soon engulfed by the Hundred Years' War, of which the Battle of Poitiers in September 1356 was a critical event. Despite being woefully outnumbered, a courageous English contingent managed to soundly defeat the forces of King Jean II of France and, having cut through his desperate guard, capture the king himself.

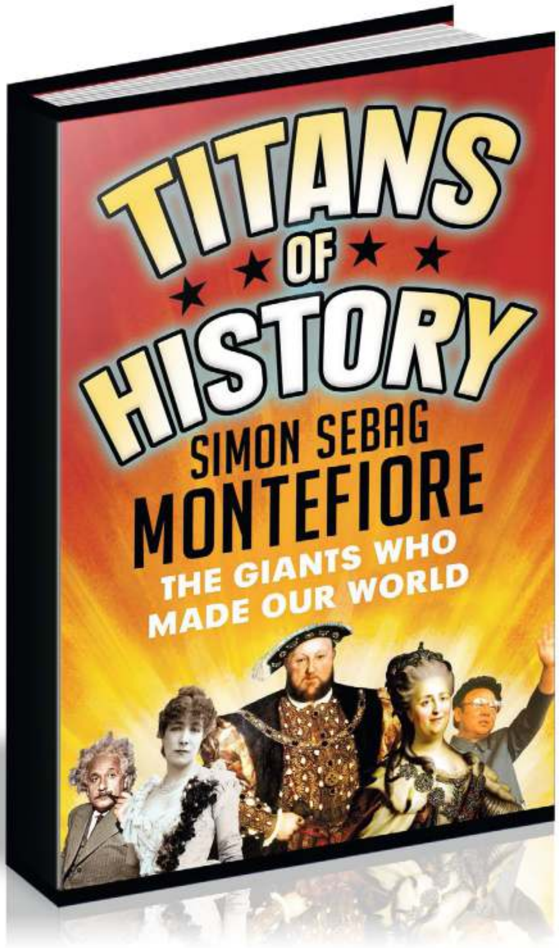
Between numerous such accounts of war, Tuchman delves into the strategic marriage between de Coucy and Isabella of England, daughter of King Edward III, in 1365, an arrangement that saw the Frenchman granted the title 1st earl of Bedford. But any periods of tranquillity are few and far between in this book.

As if fading alongside de Coucy, Europe's power began to wane, compounded by the incursion of the burgeoning Ottoman Empire. Unfortunately for the nobleman, he was witness to a key moment in his continent's decline, fighting as part of a Crusader army that was crushed at the Battle of Nicopolis on 25 September 1396. De Coucy would die shortly after, possibly from wound incurred in the fight.

This book is nothing short of breathtaking and stands as a testimony to Tuchman's enduring gift for storytelling. Quite simply, it contains every element that an account of Medieval Europe should. It cannot be recommended enough.


THE CLASSIC BESTSELLER
A DISTANT MIRROR
THE CALAMITOUS 14TH CENTURY
Crusades and chivalry, plunder and plagues...
BARBARA TUCHMAN

"This is a story of possibly the most forlorn century in human history"



TITANS OF HISTORY:

THE GIANTS WHO MADE OUR WORLD

A snapshot of some of history's most famous

Author Simon Sebag Montefiore **Publisher** Weidenfeld & Nicolson
Price £13 **Released** Out now

Do not judge a book by its cover! This idiom has perhaps never been so true as it is about Simon Sebag Montefiore's *Titans of History*. Sadly, while updating this collection of astonishing life stories with new entries on Michelangelo and Simón Bolívar, the publisher seemingly decided to take inspiration from *The Guinness Book of Records* for its new artwork. Fortunately, the book is everything it's garish cover is not – a first-class chronology that is smart and exciting.

From Jesus Christ to Genghis Khan, Shakespeare to Einstein, Catherine the Great to Margaret Thatcher, *Titans of History* features short biographical profiles of them all. A compilation of history's most influential figures, it's perhaps no surprise that these tales are packed with heroic acts, monstrous villainy, bloody battles, sparkling intelligence and even sexual thrill-seeking. In short, they are often utterly engrossing. As well as featuring all of the big names in history, the collection does an excellent job of filling in the gaps of eras often ignored by the school curriculum, such as Holy Roman emperors and Ottoman sultans.

Sebag Montefiore also manages to cram some critical analysis into his brief biographies – most of the time. A few myths are perpetuated: the pyramids were built by slaves, John I died from eating too many peaches and Edward the Black Prince adopted a blind Bohemian king's coat of arms after admiring his courage. But these facts are mostly tangential to the broader profiles, so we will let the author off – at least until the next revised edition.

Titans of History is written in such a way that you can dip in and out of it to just read specific profiles if you like. However, it is arranged chronologically, so reading it in order helps you understand how the lives of historical figures overlapped and how events unfolded differently around the world simultaneously.

GAME OF QUEENS

The real powerbrokers of 16th-century Europe

Author Sarah Gristwood **Publisher** Oneworld
Price £10 **Released** Out now

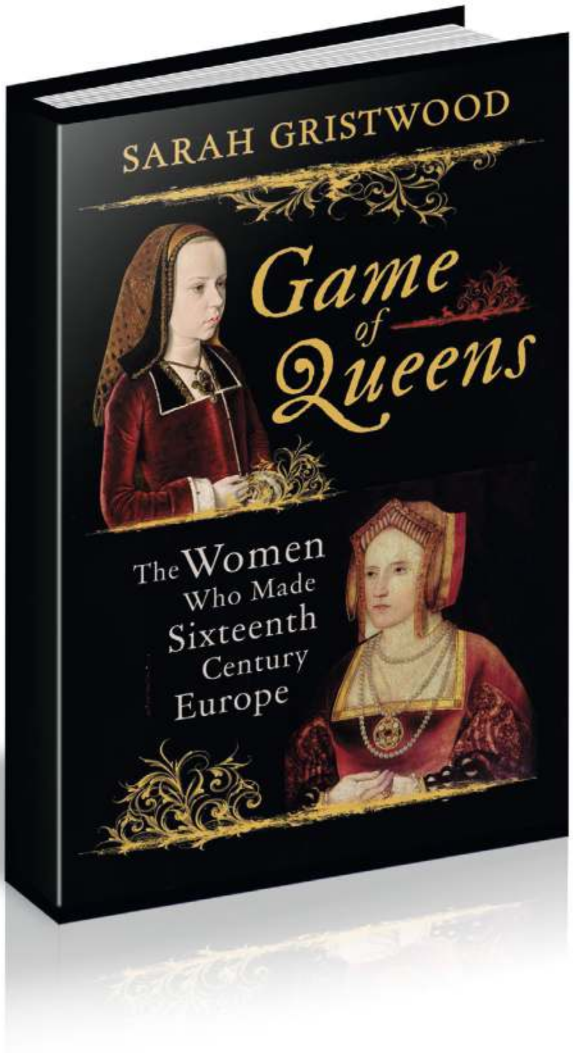
They say that behind every great man there is a great woman, and this belief is comprehensively supported by the women in Sarah Gristwood's latest book *Game of Queens*.

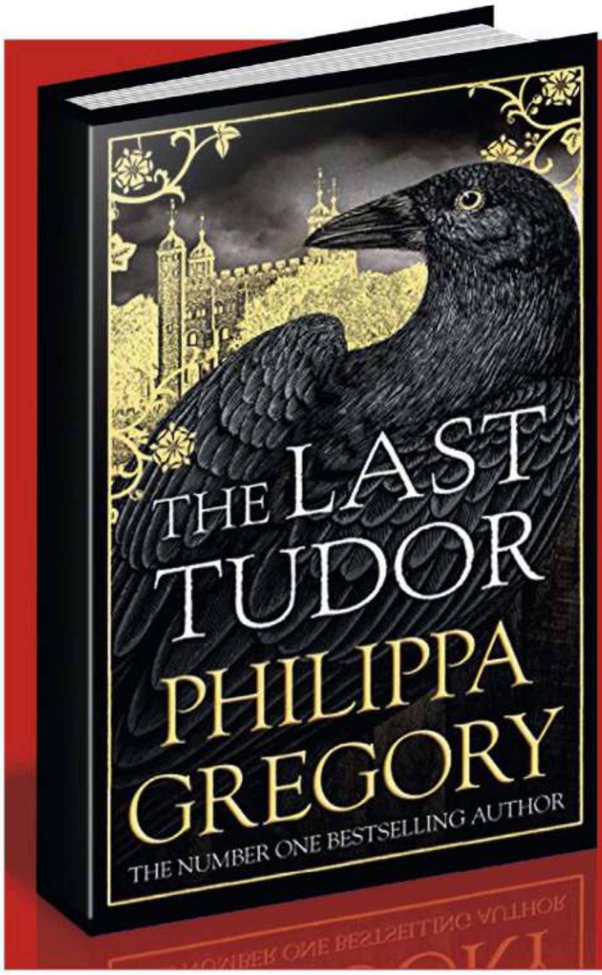
In today's age of influential female leaders, it is refreshing to read an account of the queens that held even greater power during 500 years ago. The fact that a proportion of them schemed and smiled their way to high places, as opposed to having to win elections to get there, only adds to the intrigue that permeates this original book.

While the expected names of monarchs such as Elizabeth I and Mary, Queen of Scots, feature, it is the shadowy characters like Catherine de' Medici and Isabella of Castile that provide the most interest.

Queen of Castile for just shy of 30 years, Isabella proved to be a steely, determined woman. A devout Catholic, her unwavering faith inspired her to unleash the horrors of the Spanish Inquisition. Desperate to either convert or expel the Jews of her dominion and root out 'heretics', Isabella stoked the flames of repression, which eventually engulfed around 150,000 people. And while in her less hate-filled moments Castile's queen saw fit to fund the explorations of Christopher Columbus, she will always be remembered as the driving force behind years of terror.

However, many of Isabella's counterparts were far less aggressive in their pursuits, leading their countries with cool-headedness and a fair approach. The achievements of the likes of Jeanne d'Albret, a pioneering figure during the Reformation, and Christina of Denmark, a key player in the negotiations that ended a bloody 65-year struggle between Spain and France, are rightly included and serve as reminders that many of Europe's queens were leading lights during dark times.





THE LAST TUDOR

The final chapter on the Tudor reign

Author Philippa Gregory **Publisher** Simon & Schuster
Price £20 **Released** Out now

As he lay on his deathbed, aged just 15-year-old, King Edward VI named his Protestant cousin Lady Jane Grey as his heir. Within days of his death, despite her vehement refusal to be the de facto queen, Lady Grey was forced onto the throne. Bitter envy from Mary Tudor and her supporters dictated the queen's short reign and by day nine she was removed from power.

Considered a threat to the crown, she and her inner circle were escorted to the Tower of London where they faced certain death – the victims of the papist and Protestant battle that dominated England. Spared her life by Mary, the outlook for the Nine Day Queen continued to look bleak as Elizabeth I ascended to the throne. Gregory paints a controversial picture of Elizabeth, who appears determined that if she is not the one to marry and produce an heir to the throne, then she would not allow her cousins to do so, either. As the story unfolds, the author delves into the gossip and rumours that the Virgin Queen was not all she seemed, ruling her country and her court with an iron fist.

The fifteenth novel in Gregory's Plantagenant and Tudor series will not disappoint long-running fans. Although a little slow at first, she does well to create an intricate world around such a short-term and lesser-known monarch and her family.

Told through the voices of each of the Grey sisters – Jane, Mary and Katherine – Gregory turns even the most minute of characters into a glistening part of history's rich tapestry. Her literary flair and structured research make this book just as impressive as the rest, although not necessarily the best in her Tudor queen saga.

SQUADRON: ENDING THE AFRICAN SLAVE TRADE

A tale of unsung heroes

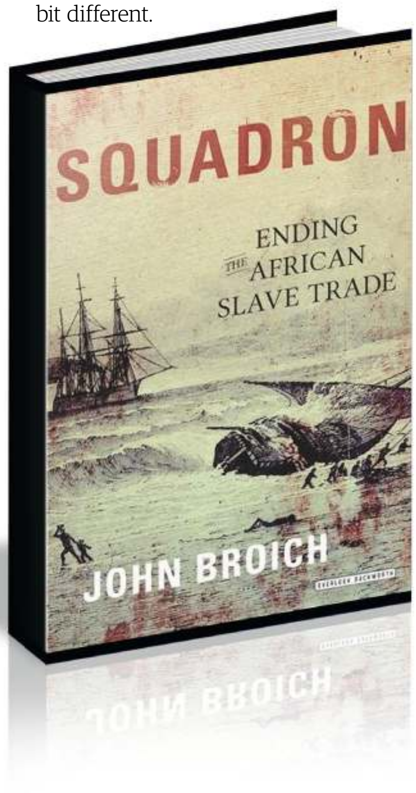
Author John Broich **Publisher** Duckworth Overlook **Price** £20 **Released** Out now

Leopold Heath, George Sulivan, Edward Meara and Philip Colomb. Four Royal Naval officers who were determined to end the East African slave trade, despite the opposition they faced from the merchant class and the British government. Their story has been largely forgotten but historian John Broich has made a brilliant attempt at bringing these men back into the fold.

Laid out chronologically, Broich entwines their stories with their battles against the slavers, seizing their ships and freeing the slaves trapped on board. He includes the impact their campaign had back home – it is interesting to discover how the abolition movement, which at this point was lulling in 19th-century Britain, was hit with renewed zeal as abolitionists seized on the actions of the officers and their squadron. The little personal stories that pop up provide insight into the real experiences of these men. For example, the tale of Sabourri, a young East African boy and slavery refugee who falls gravely ill with cholera on Colomb's ship, HMS Dryad, exposes the real fear of disease at sea – and Colomb's fear that it would decimate his crew.

It is clear to see how much time Broich has spent delving into archives for this book, and that's before the hefty notes section at the back, detailing his numerous sources. He successfully incorporates this research throughout without it becoming too dry and academic, which is no mean feat for a historically accurate book! The glossaries at the beginning are great additions for those who know nothing about this area of history.

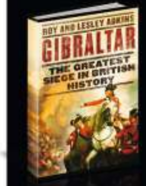
Captivating, insightful and concise this book serves as reminder that out there are true stories that have been swept aside and deserve to be told. It is a great read for those who want to try something a little bit different.



HISTORY of WAR RECOMMENDS...

Gibraltar: The Greatest Siege in British History

Author: Roy and Lesley Adkins
Price: £20 **Publisher:** Little, Brown



Britain was fighting on all fronts in the late 18th century, most notably with the American War of Independence from 1775, another war with France in 1778 and with Spain from 1779.

The Siege of Gibraltar in 1778 saw the Spanish and the French assault the British garrison together in a sustained attack that lasted three years and seven months – the longest ever endured by the British Armed Forces.

This highly readable account is told through papers and documents left behind by the people involved, so you feel as if you're among the action. With plenty of drama to draw upon and an impressive commitment to research, this is a book to delight the military history enthusiast.

THE WARS OF THE ROSES IN 100 FACTS

Catchy bite-sized Medieval history

Author Matthew Lewis **Publisher** Amberley Publishing **Price** £14 **Released** Out now

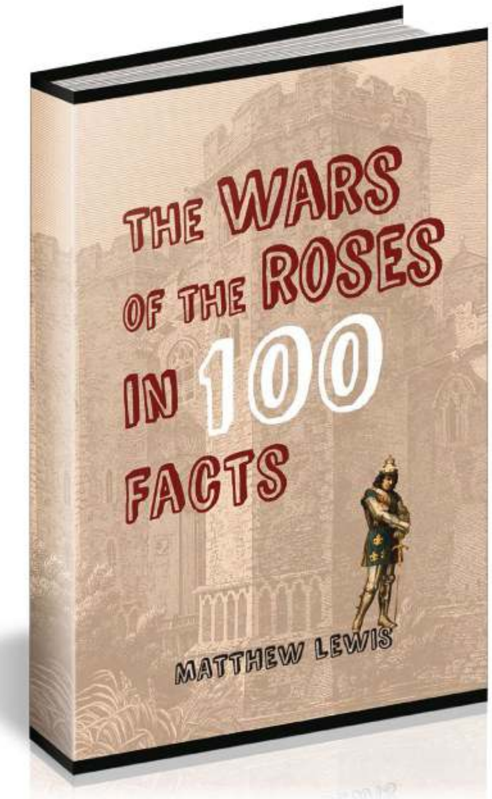
Delving into Medieval history can sometimes feel daunting, especially for the uninitiated or casual enthusiasts. Not only is there an often-complex series of events to learn about, but the nature of politics and society were often so vastly different from what we know today that it adds another layer of confusion, rendering Medieval history off-putting for many. And it's a shame, as the intricate history of events such as the Wars of the Roses is nothing short of fascinating.

That's why Matthew Lewis' bite-sized addition to this extensively covered period of upheaval in Medieval England is such a welcome treat for enthusiasts of the period.

By essentially dividing the most seminal, intriguing and sometimes strange events and elements of this series of wars, conflicts and battles, Lewis deftly balances his expert insight and analysis of the period with his accessible and often entertaining writing style. Not afraid to point out the strange and sometimes borderline comical (if it weren't for all the horrific violence along the way, that is), Lewis makes the Wars of the Roses a much more approachable subject for those who tend to avoid it or simply just don't give themselves time to read 'dryer' longform literature on this key part of English history.

While the short chapters sometimes – and quite understandably – feel contracted, especially when discussing the broader reasons behind or implications of the wars, most of the entries are perfectly self-contained nuggets of knowledge, balancing politics, social upheaval, character snapshots and key events in varying levels of bloodshed, often providing fascinating and sometimes surprising insight to encourage the reader to seek out more in-depth material on the subject.

As such, Lewis' easily digestible book should prove a lasting quick-reference companion to any fan of Medieval English history, and one to introduce even more people to this fascinating part of a nation's heritage and legacy.



THE CROWN SEASON ONE

Long may it reign

Certificate 15 **Director** Peter Morgan **Cast** Claire Foy, Matt Smith, John Lithgow, Vanessa Kirby **Price** £25 **Released** Out now

While costume dramas about kings and queens are commonplace, few are quite like *The Crown*. The opening scene rather graphically depicts George VI coughing blood into a toilet, while the following ten episodes are equally unflinching. Throwing open the doors of Buckingham Palace, *The Crown* bears all of the House of Windsor's secrets from the royal couple's marital tensions, the Duke of Edinburgh's gaffes, and sibling squabbles as it charts the early years of Queen Elizabeth II.

Claire Foy plays Elizabeth, from her marriage to Philip (Matt Smith) in 1947 through to the climax of her sister Princess Margaret's (Vanessa Kirby) relationship with Peter Townsend (Ben Miles) in 1955. John Lithgow chews a lot of scenery as an elderly and ailing Winston Churchill, mentoring Her Majesty through her new duties. Churchill's presence also means that the drama can also include all those key historical moments that fall outside the royal remit – such as the Soviet Union's first atomic bomb test and the Great Smog of London.

Written by Peter Morgan, who also wrote 2006's Oscar-winning *The Queen*, it's perhaps no surprise that the show is so psychologically acute. Directed by *Billy Elliot's* Stephen Daldry for the first two episodes, the series feels taught throughout (unlike so many shows that are made for Netflix), even if it occasionally froths with melodrama. Reportedly costing £100 million – making it the most expensive TV series ever – the costumes and sets are suitably lavish.

While *The Crown* refuses to bow to royal propriety, it paints a sympathetic portrait of the royal family. The Queen and her clan are revealed to be – despite their best efforts to appear morally upstanding and politically neutral – regular people with human frailties.

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HISTORY VS HOLLYWOOD

Fact versus fiction on the silver screen

THE 13TH WARRIOR

Director: John McTiernan **Starring:** Antonio Banderas, Diane Venora, Omar Sharif **Country:** United States **Released:** 1999

This tale of an Arabian diplomat's experience with the Vikings may have a basis in facts but what it depicts is far from the truth

F

VERDICT It may be very inaccurate but it is a real guilty pleasure!

01 The film is an adaption of Michael Crichton's novel *Eaters of the Dead* but is based on the real-life chronicle of Ahmad Ibn Fadlan and his experience with the Vikings. The first 10 minutes pass muster but after that it quickly descends into fantasy.

02 At the beginning of the film, Ahmad's caravan is attacked by a group of "murderous bandits" known as the Tatars before he is saved by the Vikings. In fact the Tatars did not appear until at least the 13th century, making their inclusion anachronistic.

03 Ahmad met the Vikings in 922, yet one of the Vikings is depicted wearing the helmet of a Spanish conquistador, which wasn't developed until the 16th century and is from the wrong country. Beowulf's armour is also inaccurate – his breastplate is from the 15th century.

04 Ahmad is unable to speak Latin or Greek, despite being an educated man, instead relying on his friend to interpret. But he learns the Vikings' language quickly and speaks it fluently for the rest of the film, which seems rather unrealistic.

05 The enemies in the film, the Wendol, are entirely fictional. They are based on Grendel, one of the antagonists from *Beowulf*, and are presented in the film as the last surviving Neanderthals, despite the fact they became extinct thousands of years before.

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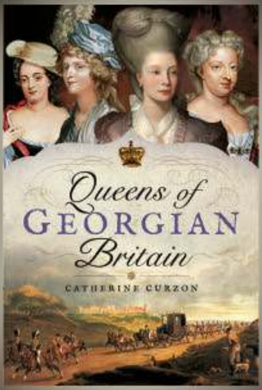
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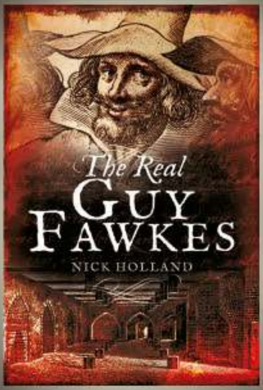
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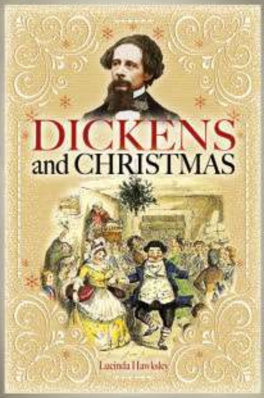
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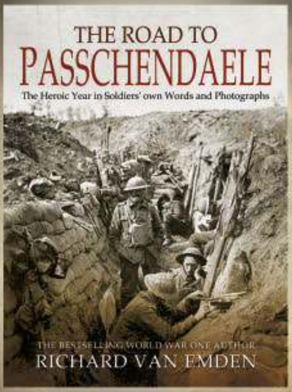
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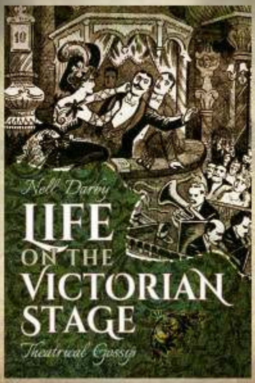
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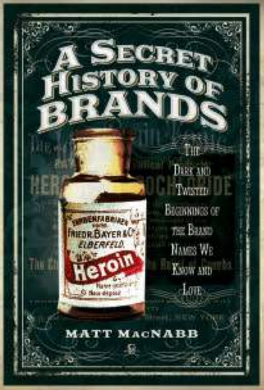
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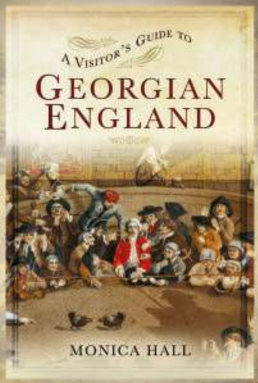
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